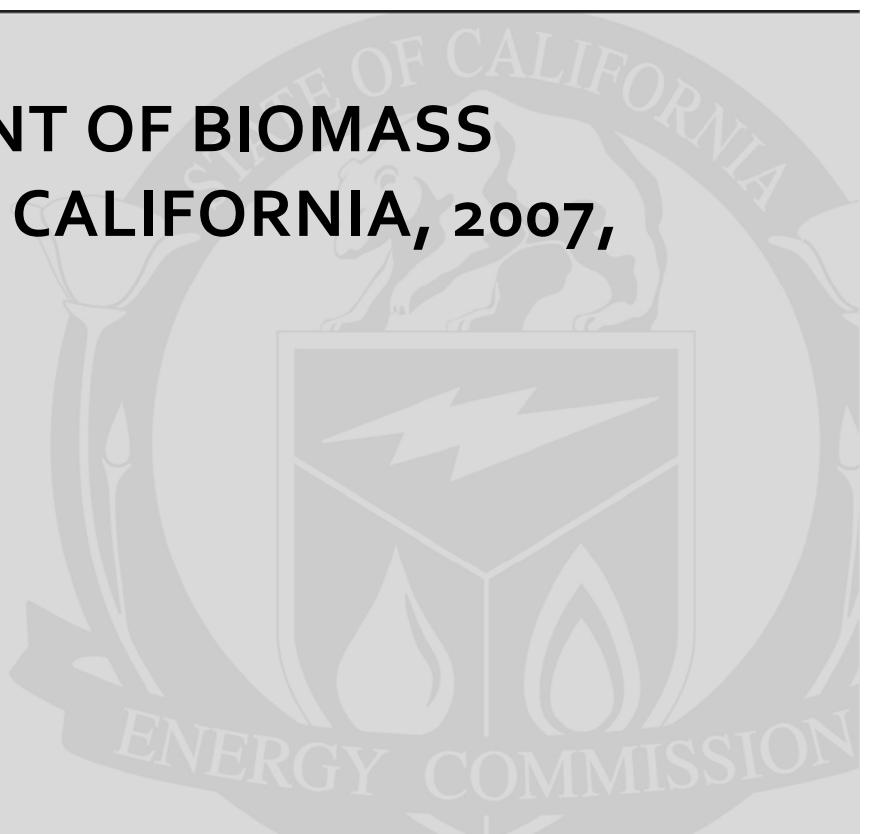


# **Energy Research and Development Division**

## **FINAL PROJECT REPORT**

### **AN ASSESSMENT OF BIOMASS RESOURCES IN CALIFORNIA, 2007, 2010 and 2020**



Prepared for: California Energy Commission  
Prepared by: University of California, Davis



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## PREFACE

The California Energy Commission Energy Research and Development Division supports public interest energy research and development that will help improve the quality of life in California by bringing environmentally safe, affordable, and reliable energy services and products to the marketplace.

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- Renewable Energy Technologies
- Transportation

*An Assessment of Biomass Resources in California, 2007, 2010 and 2020* is the final report for the California Biomass collaborative project (Contract Number 500-01-016) conducted by the California Biomass Collaborative, Department of Biological and Agricultural Engineering. The information from this project contributes to the Energy Research and Development Division's Renewable Energy Technologies Program.

For more information about the Energy Research and Development Division, please visit the Energy Commission's website at [www.energy.ca.gov/research/](http://www.energy.ca.gov/research/) or contact the Energy Commission at 916-327-1551.

## ABSTRACT

The California biomass assessment was updated for 2007. Available resources were measured and compiled into statewide and county level inventories. Resource estimates were derived for agricultural and forestry biomass, municipal wastes, and future dedicated biomass crops. California biomass totals 83 million gross bone dry tons annually and is projected to be 98 million bone dry tons annually by 2020. Biomass considered as available on a technically sustainable basis totals 32 million bone dry tons annually in 2007, increasing to 40 million in 2020. The overall resource in 2007 in million tons includes 21 from agriculture, 27 from forestry, and 36 from municipal wastes, not including waste in landfills and sewage biomass. The current technical potential in million bone dry tons per year includes over 8 in agriculture, 14 in forestry, and 9 in municipal wastes. Most dedicated crops are being grown experimentally and are not included in the 2007 total. Electrical generation potential from biomass is near 9,500 megawatts, with more than 1,900 from agriculture, 3,500 from forestry, and 3,900 from municipal wastes. The technical resource generating potential is nearly 3,820 megawatts, and could reach 6,800 megawatts by 2020 as a result of resource growth and improvements in conversion efficiencies, representing nearly nine percent of projected statewide peak power capacity. Existing and planned biomass power generation capacity in California is 968 megawatts. Total biomass capacity is 1.5 percent of statewide peak power capacity. Electrical energy contributions in 2020 could reach nearly 14 percent of projected statewide consumption. The largest development resources through 2020 will be municipal solid waste, in-forest biomass, animal manures, landfill gas, orchard and vineyard residues, and field crop residues. State biomass resources can supply a substantially larger amount of renewable electricity than is presently generated, as well as serving as feedstock for biofuels and bioproducts.

**Keywords:** Biomass resources, resource assessment, forestry resource estimate, agriculture, net generation potential

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## **EXECUTIVE SUMMARY**

### **Introduction**

California has a large and diverse supply of biomass made up of plant and animal waste materials, especially from agricultural production, that can be converted to energy. It is somewhat unclear how fully this resource can be managed for producing energy and products, partly due to uncertainties about the magnitude of the resource, the quantity that can be used on a sustainable basis, and the costs of producing, acquiring, and converting the large number of available biomass feedstocks. The principal sources of biomass in California are residues from forestry and forest products, agriculture, and urban sources such as municipal wastes, all of which provide biomass as residues of other operations and activities. In addition to the primary commodities already produced, agriculture and forestry can expand or shift into producing biomass commodities for new energy and biobased product development.

Biomass may also emerge in the form of new crops as the state moves toward reducing fossil fuel and petrochemical feedstock consumption and using more sustainable and renewable resources for energy and products. Dedicated biomass crops for energy, fuels, chemicals, and other bioproducts may develop with sufficient market incentives or in association with agronomic practices such as phytoremediation of environmentally impaired and contaminated lands.

Not all of the biomass produced in the state can or should be used for industrial purposes. For example, not all agricultural crop or forest management residue should be harvested if it is needed for maintaining soil fertility or for erosion control. The amount of biomass that can actually be used is limited by terrain limitations, environmental and ecosystem requirements, collection inefficiencies, and a number of other technical and social constraints. For these reasons, the amounts that can technically be supplied for producing energy are substantially less than gross production. Additional economic constraints further limit development, are site specific, and require detailed analyses for any proposed project.

### **Project Purpose**

The California biomass resources assessment was conducted to evaluate the potential quantities that can be used for energy, fuels, and other products. This report includes an updated California biomass inventory for 2007 as well as an assessment of potential growth in biomass resources and power generation to help satisfy the California Renewable Portfolio Standards (RPS). This regulation requires electricity generators to produce a specified portion of their electricity from renewable energy sources such as wind, solar, biomass or geothermal. This report was completed as part of a joint effort between the California Biomass Collaborative (operated by the University of California), the California Energy Commission Public Interest Energy Research (PIER) Renewables program, and the California Department of Forestry and Fire Protection-Fire and Resources Assessment Program. Other state agencies providing data to the study included the California Integrated Waste Management Board and the California Department of Food and Agriculture. Information was also obtained from industry and federal agency sources.

## Project Results

Gross output and technically or realistically available resources were measured and compiled into statewide and county level inventories. Possible biomass contributions to help meet the state's RPS renewable electricity goals were developed using assumptions regarding current and future conversion paths. The biomass production data can be used in estimating development potentials for other purposes, but only estimates of electricity capacity and energy were included in this report. Resources considered for this analysis include biomass from agriculture, forestry, municipal wastes, and dedicated biomass crops.

Current gross quantities in bone dry tons per year were derived from crop production, timber harvest, waste disposal, and other data. Gross approximations of future development were made to gauge potential impacts, although dedicated biomass crops are not currently grown to any large extent in California. All results were aggregated at the state and county levels for reporting purposes.

Not all of the gross biomass resource identified is available for utilization because of agronomic and ecological requirements, terrain limitations, inefficiencies in biomass collection and handling, and other constraints. Technical resource potential estimates were therefore provided based on these physical system constraints. The technical availability estimates, as well as gross quantities in some cases, were developed from technoeconomic and sociopolitical considerations reflecting assumptions regarding the types of systems that will be used to harvest and handle biomass, as well as social and political constraints that may affect access and use. This report includes gross outputs and technical potential as a basis for more comprehensive and site-specific economic analyses.

Projections from the base 2007 year inventory were made for 2010, 2017, and 2020 to address electricity generation contributions from biomass and to provide information needed for the economic assessments. Gross output and technical power generation potentials were computed from the resource estimates and assumptions regarding conversion technology, efficiency, capacity factor, and individual material properties such as heating value and biodegradability. Low moisture materials such as wood and some field crop residues were assumed to be converted using thermal technologies. High moisture materials such as dairy cattle manures, green waste, and food waste were assumed to be converted through anaerobic digestion (digestion not requiring oxygen), although moisture content was not the only criterion used in assigning the conversion class. In many cases, the conversion efficiencies for thermal and biological systems are similar.

Landfill gas will remain an important resource for power generation through 2020 even if the state further reduces waste disposal. The large amount of waste already in place will continue to generate gas well into the future. Bioreactor landfills can increase landfill gas generation capacity from new waste disposal due to enhanced conditions for the microorganisms and faster gas production rates. Potential capacity increases from shifting to bioreactor landfills were also assessed.

Net thermal conversion efficiencies were assumed to remain constant for 2007 at an average of 20 percent (based on dry matter higher heating value) and then increase due to improvements in boiler operations or adoption of enhanced technologies such as integrated gasification combined cycles for new capacity additions. Average efficiency was increased to 25 percent in 2010 and to 30 percent in 2017 and subsequent years. Overall efficiencies in combined heat and power operations were not incorporated into this analysis but economic factors will certainly influence future technology selection, with possible ramifications for average net electrical generation efficiency.

Net biological conversion efficiencies were based on the biodegradability of the biomass in anaerobic digestion or decomposition and the efficiency of the engine-generator set (genset) or other generator system fueled with the resulting biogas. Genset efficiency was assumed to be 30 percent for all landfill and digester gas applications. Bioconversion efficiencies were not escalated over time. Overall net bioconversion efficiencies ranged from 13 to 22 percent based on the higher heating value of total solids for the assumptions employed.

Biomass in the state totaled 83 million gross bone dry tons per year and is projected to increase to 98 million by 2020, including 5 million tons from dedicated biomass crops. Biomass considered as technically available totaled 32 million bone dry tons per year in 2007, increasing to 40 million in 2020.

Gross electrical generation potential was 9,480 megawatts electrical (MWe). The technical resource generation potential was close to 3,800 MWe. Gross and technical generation potentials could approach 16,000 MWe and 7,000 MWe by 2020, respectively, representing 20 percent and 8.7 percent of projected statewide peak power capacity (78,600 MWe).

Existing and planned biomass power generation capacity in California was estimated at 968 MWe, including solid-fueled combustion power plants and engines, boilers, and turbines operating on landfill gas, sewage digester gas, and biogas from animal manures. Electrical energy contributions from biomass produced about seven terawatt hours (TWh), 2.4 percent of the state's 288 TWh consumption. The terawatt hour is used for metering large amounts of electrical energy to industrial customers. Electrical energy contributions in 2020 (51 TWh) could reach 14 percent of statewide consumption (363 TWh).

This analysis characterized physical resource potentials, suggesting that the state's biomass resources can supply a larger amount of renewable electricity than is presently generated. Technically, current resources are adequate to support a generation level two to three times larger than today's capacity. Technology developments and resource growth over the coming years might enable capacity additions up to seven times present levels by 2017, the date of the 20 percent mandate under the RPS. Economic studies are needed to further refine the generation potential, but development on such a scale clearly has important implications for the state.

The largest resources for development will be municipal solid waste, in-forest biomass, animal manures, landfill gas, orchard, vineyard and field crop residues through 2020. A number of these have distinct properties that will need to be addressed through substantial research and

development to identify suitable conversion technologies and handling practices. Appropriate policies, incentives, and economic mechanisms to further develop these resources will also need to be identified, and more detailed technical and economic investigations will be needed, both at the state and local levels.

### **Project Benefits**

Developing technologies that help reduce greenhouse gas emissions and increase the use of renewable fuels provides Californians with secure and sustainable energy supplies. This project advanced sustainable biomass management and development in California for producing renewable energy, biofuels and products.

# **CHAPTER 1:**

## **Introduction**

California's agricultural and forest industries and its sizable population give the state a large and diverse biomass resource base. The full extent to which this resource can be managed for the production of energy and products remains somewhat speculative, however, partly due to uncertainties concerning the gross magnitude of the resource, the quantity that can be used on a sustainable basis, and the costs of producing, acquiring, and converting the large number of biomass feedstocks available. Increasing restrictions on open burning, prescribed wildland fires, and waste disposal make biomass conversion and utilization an increasingly attractive option for California. With new initiatives designed to reduce in-forest fuel loadings and risks from wildland fire, biomass utilization will be an increasingly important component of forest improvement operations. Biomass may also emerge in the form of new crops as the state moves to reduce consumption of fossil fuels and petrochemical feedstocks and use more sustainable and renewable resources for energy and products. Dedicated biomass crops for energy, fuels, chemicals, and other bioproducts may develop given sufficient market incentives or in association with agronomic practices such as phytoremediation of environmentally impaired and contaminated lands.

A major incentive for biomass energy development is the state's renewable portfolio standard (RPS). The RPS mandates 20% of retail electricity sales to come from renewable resources by the year 2010. Federal and state renewable fuels standards, if enacted, would provide incentives to further the development of biomass derived ethanol, biodiesel, and other fuels including Fischer-Tropsch (FT) liquids. Major initiatives developed for hydrogen production will also encourage development of improved processes using biomass. Bioenergy and bioproducts constitute important markets and can help to mitigate many environmental problems if implemented properly.

The principal forms of biomass produced currently are agricultural and forest residues, wood from forest management and stand improvement operations, and municipal wastes and residues. These materials constitute potential raw material feedstocks for the increased generation of electricity and production of renewable fuels, chemicals, structural composites, and other products. Only small amounts of what can be considered dedicated biomass crops are now in production, but dedicated crops represent a potential future growth area for agriculture and forestry.

Agricultural biomass includes orchard and vineyard prunings and whole trees and vines removed from production, field and seed crop residues such as cereal grain straws and stovers, vegetable crop residues, animal manures, and residues from food processing operations. Forestry produces biomass as logging slash and mill residue from timber harvesting and processing, and from forest thinning and understory clearing operations used for stand management and fire hazard reduction. Additional biomass will be generated as forest fuel reduction operations are expanded in order to reduce the considerable wildland fire potential that currently exists. Large amounts of biomass are produced as a component of municipal

solid waste (MSW) and additional biomass resides in sewage and other waste waters and in biosolids from waste water treatment. Current MSW generation rates are above 2 tons per person per year with roughly half of the waste landfilled for disposal and the rest diverted to composting, alternative daily cover (a fraction that also becomes landfilled), recycling, other manufacturing, and energy. About half of MSW is biomass. Dedicated biomass crops are currently being explored, especially in association with phytoremediation of salt affected agricultural and other contaminated lands in which biomass grown to extract water and contaminants can serve as fuel or raw material for industrial processing.

Concentrations of biomass resources vary throughout the state due to population distribution, climate, and geography. Forest resources are largely concentrated in the northern part of the state throughout the Sierra Nevada, Cascade, and Coast mountain ranges but also extend through the southern timber and chaparral ranges. Agricultural biomass is principally located in the Central Valley with more localized concentrations in the Imperial, Coachella, and Salinas Valleys and the Chino basin. Municipal solid waste is concentrated in the urban areas of the state, hence large resources exist in the Los Angeles, San Diego, San Francisco Bay Area, and Sacramento regions. Energy crops will most likely be affiliated with areas currently in agriculture or on nearby marginal lands.

A previous assessment of state biomass resources was performed by the California Energy Commission (Energy Commission) during 1991-1994. This assessment estimated resource quantities of agricultural residues, food processing wastes, forestry biomass, and energy crops. The data from this assessment have been widely used and incorporated into other studies, including an updated assessment by the Energy Commission addressing the potential for ethanol production in the state, and an assessment for examining the potential in close-coupled gasification systems for reburning and nitrogen oxide control applications at biomass direct combustion facilities. Both reports also addressed biomass in municipal solid waste. The ethanol study expanded the evaluation of energy crops, but unfortunately also misinterpreted yield factors for agricultural residues from other published data, using wet basis yield factors as dry basis, and therefore over-reporting available quantities from agriculture. Gross estimated potential from in-state sources was 50.7 million bone dry tons per year (BDT/y) not including energy crops. The gasification study estimated a gross potential for all biomass sources of 62.4 million BDT/y excluding plastics and tires.

This report includes a further update of the California biomass resource inventory and examines potential resource availability for power generation and other uses. The resources considered include the following:

- Agricultural Residue Biomass
  - Orchard and vineyard crops
  - Field and seed crops
  - Vegetable crops
  - Food processing residues
  - Animal manures
- Forest Residues And Thinnings

- Forest thinnings and slash
- Shrubland treatment biomass (chaparral)
- Mill residues
- Municipal Wastes
  - Biomass fraction of municipal solid waste (MSW)
    - Paper and cardboard
    - Food wastes
    - Green wastes including leaves, grass, prunings, stumps
    - Other organics
  - Biosolids from waste water treatment operations
  - Landfill gas
  - Sewage digester gas
- Dedicated Biomass Crops

Current quantities in BDT/y are estimated for agricultural, forestry, and municipal solid wastes. Although dedicated biomass crops are not currently grown to any large extent in the state, gross approximations of future development are made for the purposes of gauging relative impacts.

The report provides estimates of gross quantities by biomass type for each of the 58 counties in the state. The methodology used to determine these quantities is described below. The study was conducted as a joint effort between the California Biomass Collaborative operated by the University of California, the California Energy Commission Public Interest Energy Research(PIER) Renewables program, and the California Department of Forestry and Fire Protection (CDFFP). Other state agencies providing data to the study included the California Integrated Waste Management Board (CIWMB) and the California Department of Food and Agriculture (CDFA).

Not all of the resources identified are available for utilization. Reductions occur due to losses and inefficiencies in collection, processing, transportation, storage, and other handling operations. Agronomic and ecological requirements, terrain limitations, and political constraints also impose technical limits on the amount of resource that can be made available for utilization. Technical resource availability is therefore estimated along with gross quantities.

To address the contributions that biomass might make in helping to satisfy the RPS, projections from the base 2007 year inventory are made for the years 2010, 2017, and 2020. Gross and technical power generation potentials are computed from the resource estimates. Conversion efficiency assumptions depend on the conversion technology considered for each biomass type, and net efficiencies are employed to represent the actual power available exclusive of parasitic demands. Lower moisture materials are assumed to be converted using thermal technologies, while higher moisture materials are assumed to be converted by biological means using anaerobic digestion. In many cases, the efficiencies are similar.

Generating capacity is estimated from annual resource availability, fuel heating value, net conversion efficiency, and facility capacity factor or plant availability. For landfill gas, annual

gas production is based on waste in place and waste additions over time along with assumptions regarding the biodegradability, gas generation rate, and gas composition. The potential for increasing generation capacity through the adoption of bioreactor landfills is also briefly explored. Power generation from digester gas is similarly estimated based on the quantity of waste water treated, typical strength of waste water, biodegradability, gas generation rate, and gas composition.

Thermal conversion efficiencies for solid fueled facilities are assumed to increase over time due to improvements in boiler operations or adoption of enhanced technologies such as integrated gasification combined cycles. For economic or environmental reasons, deployment of smaller scale systems operating at lower efficiency than advanced large scale facilities may occur simultaneously, hence future capacity estimates may be somewhat optimistic. However, cogeneration or combined cooling, heating and power operations (CCHP) might serve to increase overall system efficiency and provide for greater contributions than indicated here. Resource data are being applied in a related study attempting to define economic potentials for electricity from biomass. Results of that study will be reported separately.

Although this updated assessment deals primarily with the potential power generation from biomass, the inventory data are general and can be used for other assessments of fuels, chemicals, and other bioproducts to come from biomass. Markets for energy and products from biomass will likely continue to develop together. Power generation estimates presented here show potential contributions, recognizing that other markets may compete for resource. In many cases the combined development of power and bioproducts, such as through biorefinery concepts, could serve to enhance the overall efficiency of resource utilization and possibly the economic sustainability of the industry.

## **CHAPTER 2:**

## **Resource Estimates**

### **2.1 Agriculture**

Principal sources of biomass from agriculture in California are residues of crop and livestock production. These include orchard and vineyard prunings and tree and vine removals; straws and stovers from field and seed crops; leaf, vine, and other plant residuals from vegetable crops; food and fiber processing residues including nut shells, pits, hulls, cotton gin trash, paunch contents, offal, and other residuals from meat processing; and animal manures. Dedicated biomass crop production may provide new agricultural opportunities as renewable energy and bioproduct markets develop. .

Area planted to orchard and vineyard, field and seed, and vegetable crops in 2007 was about 9.15 million acres. This is about 23,000 fewer acres than in 2005 but 125,000 more than in 2003.<sup>1</sup> Acres by county for these three categories are listed in Table 1.

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<sup>1</sup> See first CBC resources report

**Table 1: Acres Planted in Orchard and Vineyard, Field and Seed, and Vegetable Crops 2007**

County	Orchard (Acres)	Field (Acres)	Vegetable (Acres)	Total County (Acres)
Alameda	2,400	4,400	0	6,700
Alpine	0	0	0	0
Amador	4,200	2,300	0	6,500
Butte	83,700	115,900	200	199,800
Calaveras	1,600	400	0	2,000
Colusa	38,200	201,400	18,500	258,000
Contra Costa	4,000	16,000	6,000	25,900
Del Norte	0	2,100	0	2,100
El Dorado	3,300	300	0	3,600
Fresno	434,700	425,500	267,100	1,127,300
Glenn	53,500	140,900	0	194,300
Humboldt	0	3,300	0	3,300
Imperial	6,400	445,800	105,800	558,000
Inyo	0	4,700	400	5,100
Kern	279,400	533,600	14,200	827,300
Kings	53,400	482,300	29,700	565,400
Lake	12,900	2,200	0	15,100
Lassen	0	66,000	1,400	67,400
Los Angeles	700	10,600	100	11,500
Madera	183,000	101,900	6,200	291,100
Marin	100	2,800	200	3,100
Mariposa	300	700	0	1,000
Mendocino	18,900	0	300	19,200
Merced	122,700	371,700	46,400	540,800
Modoc	0	81,200	7,200	88,300
Mono	0	13,500	200	13,700
Monterey	40,000	27,700	305,600	373,300
Napa	42,500	200	0	42,700
Nevada	400	0	0	400
Orange	100	0	1,700	1,800
Placer	2,700	11,300	0	14,000
Plumas	0	9,700	0	9,700
Riverside	41,300	97,000	33,900	172,100
Sacramento	33,900	77,100	9,500	120,500
San Benito	7,900	16,600	28,300	52,800
San Bernardino	4,500	18,900	4,500	27,800
San Diego	40,000	4,900	6,700	51,600
San Francisco	0	0	0	0
San Joaquin	207,000	266,100	84,600	557,700
San Luis Obispo	44,900	27,700	35,200	107,900
San Mateo	100	1,300	1,900	3,300
Santa Barbara	32,200	15,000	78,600	125,700
Santa Clara	3,500	4,600	14,000	22,100
Santa Cruz	3,600	100	14,500	18,200
Shasta	900	27,600	2,200	30,700
Sierra	0	3,500	0	3,500
Siskiyou	0	105,300	2,800	108,100
Solano	16,600	105,400	12,200	134,300
Sonoma	58,500	7,000	300	65,800
Stanislaus	156,900	224,000	31,200	412,100
Sutter	50,600	153,300	10,100	213,900
Tehama	38,000	14,200	100	52,200
Trinity	100	500	0	600
Tulare	287,500	468,900	2,100	758,400
Tuolumne	0	600	0	600
Ventura	41,200	4,700	45,400	91,300
Yolo	33,100	219,900	48,400	301,500
Yuba	26,800	42,200	0	69,000
<b>Sum of Other</b>	<b>27,900</b>	<b>191,800</b>	<b>149,800</b>	<b>369,500</b>
<b>STATE TOTALS</b>	<b>2,546,000</b>	<b>5,176,000</b>	<b>1,427,000</b>	<b>9,150,000</b>

### 2.1.1 Orchard and Vineyard Residues

Gross quantities,  $q_{i,j}$ , expressed as bone-dry tons per year (BDT/y), of residual biomass from orchard and vineyard operations were estimated from crop-specific acreage data and biomass yield factors according to:

$$q_{i,j} = A_{i,j} y_i \quad [1]$$

where  $A_{i,j}$  = production area for biomass type  $i$  in year  $j$  (acres/y)

$y_i$  = yield factor for biomass type  $i$  (BDT/acre, dry basis)

Acreage data were obtained from the National Agricultural Statistical Service (NASS) databases<sup>2</sup> maintained by USDA using the latest comprehensive collection for 2007. Historical data were also drawn from the CASS/NASS databases to examine production trends and forecast future quantities. Yield data are from the UC Cooperative Extension compilation of Knutson and Miller (1982),<sup>3</sup> converted to dry basis using the reported residue moisture contents. Many of the yield factors date to field studies conducted in the period 1950-1970. Although current residue yields may not be substantially different, there has been no recent attempt to update the values. Yield values are listed in Table 2.

About 2.5 million acres were in orchard and vineyard crops in 2007, with highest concentration in the San Joaquin Valley (Figure 1). Resource quantities for 2010 to 2020 were projected from base year data using escalation rates derived from production trends over the previous 10 years as listed in Table 2. Although some large crop-specific uncertainties are introduced by such projections, aggregated statewide quantities for all orchard and vineyard crops reflect only a moderate growth trend.

Technical resource availability was determined from the gross quantity by modifying equation [1] with a technical availability factor,  $a_i$ :

$$q_{t,i,j} = a_i q_{i,j} \quad [2]$$

$a_i$  = technical availability factor for biomass type  $i$  (--)

For orchard and vineyard crop residues, the availability factor was assumed to be the same for all types and equal to 0.7 (70% availability). Estimated gross and technical biomass quantities for each crop type by county are listed in Tables 3 - 10 for years 2007, 2010, 2017, and 2020.

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<sup>2</sup> <http://www.usda.gov/nass/>, also <http://www.nass.usda.gov:81/ipedb/>

<sup>3</sup>Knutson, J. and G. E. Miller. 1982. Agricultural residues (biomass) in California...factors affecting utilization. UCCE leaflet 21303, University of California Cooperative Extension, Berkeley, California.

**Table 2: Residue Yield Factors and Ten Year (1993-2002) Historical Growth Rates for Orchard and Vineyard Crops**

Biomass Type	Wet Basis Conversion Factor (tons/acre-y)	Moisture Content (% wet basis)	Dry Basis Conversion Factor (tons/acre-y)	Growth rates (%/y)
Apples	2.2	35	1.43	-2.85
Apricots	2.0	35	1.30	-1.26
Avocados	1.5	35	0.98	-2.26
Cherries	0.4	35	0.26	8.31
Dates	0.6	25	0.45	0.0*
Figs	2.2	35	1.43	-0.96
Grapes	2.0	35	1.30	2.26
Kiwifruit	2.0	35	1.30	-4.18
Nectarines	1.6	35	1.04	2.69
Olives	1.5	35	0.98	1.81
Peaches	2.0	35	1.30	1.60
Pears	2.3	35	1.50	-3.26
Persimmons	1.6	35	1.04	0.00
Plums & Prunes	1.5	35	0.98	-1.14
Pomegranates	1.6	35	1.04	0.00
All Citrus	1.0	35	0.65	0.40
Almonds	1.3	35	0.85	2.53
Pecans	1.6	35	1.04	0.39
Pistachios	1.0	35	0.65	3.83
Walnuts	1.0	35	0.65	0.78
Fruits & Nuts, unspecified	1.6	35	1.05	0.0*

\* 0 = no growth assumed

**Figure 1: Orchard and vineyard biomass (gross BDT/yr) in California, 2007**



**Table 3: Gross Orchard and vineyard Biomass (BDT/yr) 2007**

County Name	Total Orchard & Vine BDT	Apples	Apricots	Avocados	Cherries	Dates	Figs	Grapes	Kiwifruit	Nectarines	Olives	Peaches	Pears	Persimmons	Plums & Prunes	Pomegranates	All Citrus	Almonds	Pecans	Pistachios	Walnuts	Fruit and Nut Unspecified	
Alameda	3,100	-	-	-	-	-	-	3,000	-	-	-	-	-	-	-	-	-	-	-	-	-	100	
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Amador	5,100	-	-	-	-	-	-	4,800	-	-	-	-	-	-	-	-	-	-	-	-	-	300	
Butte	67,910	-	-	-	-	-	-	-	1,120	-	1,860	3,100	-	-	9,970	-	110	32,230	-	410	19,110	-	
Calaveras	1,500	60	-	-	-	-	-	780	-	-	140	-	-	-	-	-	-	-	-	-	-	520	
Colusa	32,180	-	-	-	-	-	-	-	-	-	-	-	-	-	1,610	-	-	24,170	-	-	3,070	3,330	
Contra Costa	4,430	370	670	-	90	-	-	2,520	-	40	-	200	-	-	-	40	-	-	-	-	330	170	
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
El Dorado	4,170	1,210	-	-	20	-	-	2,420	-	-	140	190	-	-	50	-	-	-	-	-	-	140	
Fresno	462,570	1,370	2,410	-	700	-	-	258,000	320	20,560	990	27,200	1,330	800	20,350	2,870	26,320	83,910	-	11,770	3,670	-	
Glenn	44,480	-	-	-	-	-	-	1,700	-	-	3,430	-	-	-	6,630	-	340	23,910	-	610	7,860	-	
Humboldt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Imperial	3,980	-	-	-	-	460	-	-	-	-	-	-	-	-	-	-	3,520	-	-	-	-	-	
Inyo	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	
Kern	251,720	3,190	560	-	610	-	-	94,900	-	820	-	2,020	-	-	1,620	-	31,000	85,350	-	30,620	1,030	-	
Kings	49,710	-	980	-	-	-	-	9,050	-	2,690	-	7,630	-	-	1,970	-	-	8,680	-	6,510	5,680	6,520	
Lake	15,390	-	-	-	-	-	-	10,190	-	-	-	-	3,350	-	-	-	-	-	-	-	1,760	90	
Lassen	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Los Angeles	750	210	-	60	40	-	-	440	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Madera	189,870	730	-	-	-	-	8,390	102,310	-	520	1,290	1,520	-	-	1,660	-	2,370	52,470	-	15,800	860	1,950	
Marin	150	-	-	-	-	-	-	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mariposa	300	-	-	-	-	-	-	-	130	-	-	-	-	-	-	-	-	-	-	-	-	170	
Mendocino	24,890	390	-	-	-	-	-	20,980	-	-	-	-	-	3,180	-	-	-	-	-	-	-	340	
Merced	112,080	-	1,550	-	-	3,200	15,670	-	-	-	6,640	-	-	-	1,810	-	-	74,170	-	2,800	3,820	2,420	
Modoc	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Monterey	50,970	-	-	220	-	-	-	49,610	-	-	-	-	-	-	-	-	790	-	-	-	150	200	
Napa	55,120	-	-	-	-	-	-	54,840	-	210	-	-	-	-	-	-	-	-	-	-	70	-	
Nevada	470	-	-	-	-	-	-	470	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Orange	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	
Placer	2,110	70	-	-	-	-	-	250	-	-	-	110	60	-	350	-	100	-	-	-	1,170	-	
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Riverside	34,620	90	20	7,240	10	2,430	-	12,550	-	-	90	30	30	-	-	11,920	-	-	-	-	-	210	
Sacramento	44,460	390	-	-	150	-	-	33,140	-	-	-	9,690	-	-	-	-	-	-	-	-	-	1,090	
San Benito	8,370	560	1,280	-	-	160	-	-	4,920	-	-	-	-	-	-	-	-	-	-	-	1,240	210	
San Bernardino	3,700	380	-	-	200	-	-	-	940	-	-	-	-	-	-	1,790	-	-	260	-	130	-	
San Diego	35,380	620	-	25,360	-	-	-	400	-	-	-	-	400	-	-	8,010	-	-	-	-	-	590	
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
San Joaquin	203,370	5,280	1,220	-	4,370	-	-	121,230	-	-	3,290	840	-	-	-	37,180	-	-	28,540	-	1,420	-	
San Luis Obispo	53,910	-	-	3,600	-	-	-	45,060	-	-	-	-	-	-	-	1,170	-	-	-	-	1,510	2,570	
San Mateo	180	-	-	-	-	-	-	-	120	-	-	-	-	-	-	-	-	-	-	-	-	60	
Santa Barbara	37,720	-	-	8,390	-	-	-	27,080	-	-	-	-	-	-	-	1,080	-	-	-	-	-	1,170	
Santa Clara	3,280	-	380	-	260	-	-	2,280	-	-	-	-	-	-	90	-	-	-	-	-	140	130	
Santa Cruz	4,950	3,860	-	-	-	-	-	780	-	-	-	-	-	-	-	-	-	-	-	-	-	310	
Shasta	600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	600	
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Siskiyou	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Solano	15,010	-	-	20	-	-	-	5,580	-	-	180	-	-	1,290	-	-	1,780	-	-	4,800	1,360	-	
Sonoma	76,510	4,350	-	-	-	-	-	72,160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Stanislaus	138,920	1,530	6,500	-	490	-	-	15,990	-	250	-	11,730	-	-	-	230	83,400	-	-	17,750	1,050	-	
Sutter	45,800	-	-	-	-	-	-	-	150	-	10,120	190	270	19,160	-	-	3,960	-	-	11,280	670	-	
Tehama	30,940	-	-	-	-	-	-	270	-	5,360	-	-	-	8,430	-	-	6,590	-	130	10,160	-	-	
Trinity	150	-	-	-	-	-	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tulare	253,730	-	480	-	390	-	-	72,940	2,130	13,840	12,900	18,160	500	490	17,920	1,690	68,670	16,040	740	9,030	17,600	210	
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ventura	32,340	-	-	16,010	-	-	-	-	-	-	-	-	-	-	-	15,780	-	-	-	-	-	550	-
Yolo	31,310	-	-	-	-	-	-	-	13,200	-	-	-	-	-	2,030	-	-	7,920	-	-	6,400	1,760	-
Yuba	24,400	-	-	-	-	-	-	-	110	370	-	4,920	-	-	9,870	-	-	940	-	-	6,140	2,050	-
Sum of Other	29,440	690	80	1,500	200	30	3,450	880	720	590	1,100	4,250	2,160	430	3,840	4,420	820	370	1,200	760	710	1,240	-
STATE TOTALS	2,492,000	25,400	16,100	62,600	7,500	2,900	15,000	1,062,000	4,800	39,300	27,300	101,300	21,500	2,400	108,700	9,000	174,100	543,100	1,900	78,700	156,400	32,100	

**Table 4: Technical Orchard and Vineyard Potential (BDT/yr) 2007**

County Name	Total Orchard & Vine BDT	Apples	Apricots	Avocados	Cherries	Dates	Figs	Grapes	Kiwifruit	Nectarines	Olives	Peaches	Pears	Persimmons	Plums & Prunes	Pomegranates	All Citrus	Almonds	Pecans	Pistachios	Walnuts	Fruit and Nut Unspecified
Alameda	2,200	-	-	-	-	-	-	2,100	-	-	-	-	-	-	-	-	-	-	-	-	-	100
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Amador	3,600	-	-	-	-	-	-	3,400	-	-	-	-	-	-	-	-	-	-	-	-	-	200
Butte	47,700	-	-	-	-	-	-	-	800	-	1,300	2,200	-	-	7,000	-	100	22,600	-	300	13,400	-
Calaveras	1,000	-	-	-	-	-	-	500	-	100	-	-	-	-	-	-	-	-	-	-	-	400
Colusa	22,400	-	-	-	-	-	-	-	-	-	-	-	-	-	1,100	-	-	16,900	-	-	2,100	2,300
Contra Costa	3,100	300	500	-	100	-	-	1,800	-	-	-	100	-	-	-	-	-	-	-	-	200	100
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
El Dorado	2,800	800	-	-	-	-	-	1,700	-	-	100	100	-	-	-	-	-	-	-	-	-	100
Fresno	323,700	1,000	1,700	-	500	-	-	180,600	200	14,400	700	19,000	900	600	14,200	2,000	18,400	58,700	-	8,200	2,600	-
Glenn	31,000	-	-	-	-	-	-	1,200	-	-	2,400	-	-	-	4,600	-	200	16,700	-	400	5,500	-
Humboldt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Imperial	2,800	-	-	-	-	300	-	-	-	-	-	-	-	-	-	-	-	2,500	-	-	-	-
Inyo	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20
Kern	176,190	2,230	390	-	430	-	-	66,430	-	570	-	1,410	-	-	1,130	-	21,700	59,750	-	21,430	720	-
Kings	34,810	-	690	-	-	-	-	6,340	-	1,880	-	5,340	-	-	1,380	-	-	6,080	-	4,560	3,980	4,560
Lake	10,770	-	-	-	-	-	-	7,130	-	-	-	-	2,350	-	-	-	-	-	-	-	1,230	60
Lassen	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Los Angeles	530	150	-	40	30	-	-	-	310	-	-	-	-	-	-	-	-	-	-	-	-	-
Madera	132,900	510	-	-	-	-	5,870	71,620	-	360	900	1,060	-	-	1,160	-	1,660	36,730	-	11,060	600	1,370
Marin	110	-	-	-	-	-	-	-	110	-	-	-	-	-	-	-	-	-	-	-	-	-
Mariposa	210	-	-	-	-	-	-	-	90	-	-	-	-	-	-	-	-	-	-	-	-	120
Mendocino	17,430	270	-	-	-	-	-	14,690	-	-	-	-	2,230	-	-	-	-	-	-	-	-	240
Merced	78,460	-	1,090	-	-	2,240	10,970	-	-	-	4,650	-	-	1,270	-	-	51,920	-	1,960	2,670	1,690	
Modoc	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monterey	35,680	-	-	150	-	-	-	34,730	-	-	-	-	-	-	-	-	550	-	-	110	140	
Napa	38,590	-	-	-	-	-	-	38,390	-	-	150	-	-	-	-	-	-	-	-	-	50	
Nevada	330	-	-	-	-	-	-	-	330	-	-	-	-	-	-	-	-	-	-	-	-	-
Orange	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	-	-	-	-	-
Placer	1,490	50	-	-	-	-	-	180	-	-	-	80	40	-	250	-	70	-	-	820	-	-
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Riverside	24,230	60	10	5,070	10	1,700	-	8,790	-	-	60	20	20	-	-	8,340	-	-	-	-	-	150
Sacramento	31,120	270	-	-	110	-	-	23,200	-	-	-	6,780	-	-	-	-	-	-	-	-	-	760
San Benito	5,860	390	900	-	-	110	-	-	3,440	-	-	-	-	-	-	-	-	-	-	-	870	150
San Bernardino	2,590	270	-	-	140	-	-	-	660	-	-	-	-	-	-	1,250	-	-	180	-	90	
San Diego	24,760	430	-	17,750	-	-	-	280	-	-	-	-	280	-	-	5,610	-	-	-	-	-	410
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Joaquin	142,360	3,700	850	-	3,060	-	-	84,860	-	-	2,300	590	-	-	-	-	26,030	-	-	19,980	990	
San Luis Obispo	37,740	-	-	2,520	3,060	-	-	31,540	-	-	-	-	-	-	-	820	-	-	1,060	1,800		
San Mateo	120	-	-	-	-	-	-	-	80	-	-	-	-	-	-	-	-	-	-	-	40	
Santa Barbara	26,410	-	-	5,870	-	-	-	18,960	-	-	-	-	-	-	-	760	-	-	-	-	820	
Santa Clara	2,300	-	270	-	180	-	-	1,600	-	-	-	-	-	-	60	-	-	-	-	100	90	
Santa Cruz	3,470	2,700	-	-	-	-	-	550	-	-	-	-	-	-	-	-	-	-	-	-	220	
Shasta	420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	420	-	-
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Siskiyou	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solano	10,510	-	-	-	10	-	-	3,910	-	-	130	-	-	900	-	-	1,250	-	-	3,360	950	
Sonoma	53,560	3,050	-	-	-	-	-	50,510	-	-	-	-	-	-	-	-	-	-	-	-	-	
Stanislaus	97,250	1,070	4,550	-	340	-	-	11,190	-	180	-	8,210	-	-	-	160	58,380	-	-	12,430	740	
Sutter	32,060	-	-	-	-	-	-	-	110	-	7,080	130	190	13,410	-	-	2,770	-	-	7,900	470	
Tehama	21,650	-	-	-	-	-	-	190	-	3,750	-	-	-	5,900	-	-	4,610	-	90	7,110	-	
Trinity	110	-	-	-	-	-	-	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tulare	177,610	-	340	-	270	-	-	51,060	1,490	9,690	9,030	12,710	350	340	12,540	1,180	48,070	11,230	520	6,320	12,320	150
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ventura	22,650	-	-	11,210	-	-	-	-	-	-	-	-	-	-	-	-	11,050	-	-	-	-	390
Yolo	21,910	-	-	-	-	-	-	9,240	-	-	-	-	-	-	1,420	-	-	5,540	-	-	4,480	1,230
Yuba	17,090	-	-	-	-	-	-	80	260	-	3,440	-	-	6,910	-	-	660	-	-	4,300	1,440	
Sum of Other	20,610	480	60	1,050	140	20	2,420	620	500	410	770	2,980	1,510	300	2,690	3,090	570	260	840	530	500	870
STATE TOTALS	1,744,000	17,700	11,300	43,800	5,300	2,000	10,500	743,400	3,400	27,500	19,100	70,900	15,100	1,700	76,100	6,300	121,900	380,100	1,400	55,100	109,500	22,500

**Table 5: Gross Orchard and Vineyard Biomass (BDT/yr) 2010**

County Name	Total Orchard & Vine	Apples	Apricots	Avocados	Cherries	Dates	Figs	Grapes	Kiwifruit	Nectarines	Olives	Peaches	Pears	Persimmons	Plums & Prunes	Pomegranates	All Citrus	Almonds	Pecans	Pistachios	Walnuts	Fruit and Nut Unspecified
Alameda	3,300	-	-	-	-	-	-	3,210	-	-	-	-	-	-	-	-	-	-	-	-	-	100
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Amador	5,400	-	-	-	-	-	-	5,130	-	-	-	-	-	-	-	-	-	-	-	-	-	310
Butte	70,700	-	-	-	-	-	-	-	990	-	1,960	3,250	-	-	9,630	-	110	34,730	-	460	19,560	-
Calaveras	1,600	60	-	-	-	-	-	830	-	150	-	-	-	-	-	-	-	-	-	-	-	530
Colusa	34,100	-	-	-	-	-	-	-	-	-	-	-	-	-	1,560	-	-	26,050	-	-	3,140	3,330
Contra Costa	4,600	340	640	-	110	-	-	2,690	-	40	-	210	-	-	40	-	-	-	-	-	340	170
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
El Dorado	4,200	1,110	-	-	30	-	-	2,590	-	-	150	170	-	-	50	-	-	-	-	-	-	140
Fresno	491,000	1,260	2,320	-	890	-	-	275,890	280	22,260	1,040	28,530	1,200	800	19,660	2,870	26,630	90,430	-	13,170	3,760	-
Glenn	46,700	-	-	-	-	-	-	1,820	-	-	3,620	-	-	-	6,410	-	340	25,770	-	680	8,050	-
Humboldt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Imperial	4,000	-	-	-	-	460	-	-	-	-	-	-	-	-	-	-	3,560	-	-	-	-	-
Inyo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30
Kern	269,000	2,930	540	-	780	-	-	101,480	-	890	-	2,120	-	-	1,570	-	31,370	91,980	-	34,270	1,050	-
Kings	52,400	-	940	-	-	-	-	9,680	-	2,910	-	8,000	-	-	1,900	-	-	9,350	-	7,290	5,810	6,520
Lake	15,800	-	-	-	-	-	-	10,900	-	-	-	3,030	-	-	-	-	-	-	-	-	1,800	90
Lassen	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Los Angeles	800	190	-	60	50	-	-	470	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Madera	202,800	670	-	-	-	-	8,150	109,400	-	560	1,360	1,590	-	-	1,600	-	2,400	56,550	-	17,690	880	1,950
Marin	200	-	-	-	-	-	-	160	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mariposa	300	-	-	-	-	-	-	140	-	-	-	-	-	-	-	-	-	-	-	-	-	170
Mendocino	26,000	360	-	-	-	-	-	22,430	-	-	-	-	2,880	-	-	-	-	-	-	-	-	340
Merced	119,500	-	1,490	-	-	3,110	16,760	-	-	-	6,960	-	-	-	1,750	-	-	79,930	-	3,130	3,910	2,420
Modoc	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monterey	54,400	-	-	210	-	-	-	53,050	-	-	-	-	-	-	-	-	800	-	-	-	150	200
Napa	58,900	-	-	-	-	-	-	58,640	-	220	-	-	-	-	-	-	-	-	-	-	70	-
Nevada	500	-	-	-	-	-	-	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Orange	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-
Placer	2,100	60	-	-	-	-	-	270	-	-	120	50	-	340	-	100	-	-	-	1,200	-	-
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Riverside	35,100	80	20	6,760	10	2,430	-	13,420	-	-	90	30	30	-	-	-	12,060	-	-	-	-	210
Sacramento	45,900	360	-	-	190	-	-	35,440	-	-	-	8,770	-	-	-	-	-	-	-	-	-	1,090
San Benito	8,700	510	1,230	-	200	-	-	5,260	-	-	-	-	-	-	-	-	-	-	-	-	1,270	210
San Bernardino	3,800	350	-	-	190	-	-	1,010	-	-	-	-	-	-	-	-	1,810	-	-	290	-	130
San Diego	33,800	570	-	23,680	-	-	-	430	-	-	-	-	400	-	-	-	8,110	-	-	-	-	590
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Joaquin	216,100	4,840	1,170	-	5,550	-	-	129,640	-	-	3,450	760	-	-	-	-	40,070	-	-	29,220	-	1,420
San Luis Obispo	56,800	-	-	3,360	-	-	-	48,180	-	-	-	-	-	-	-	-	1,180	-	-	-	1,550	2,570
San Mateo	200	-	-	-	-	-	-	130	-	-	-	-	-	-	-	-	-	-	-	-	-	60
Santa Barbara	39,100	-	-	7,830	-	-	-	28,960	-	-	-	-	-	-	-	-	1,090	-	-	-	-	1,170
Santa Clara	3,500	-	370	-	330	-	-	2,440	-	-	-	-	-	-	90	-	-	-	-	-	140	130
Santa Cruz	4,700	3,540	-	-	-	-	-	830	-	-	-	-	-	-	-	-	-	-	-	-	-	310
Shasta	600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	610
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Siskiyou	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solano	15,600	-	-	30	-	-	-	5,970	-	-	190	-	-	1,250	-	-	1,920	-	-	4,910	-	1,360
Sonoma	81,200	3,990	-	-	-	-	-	77,160	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stanislaus	147,300	1,400	6,260	-	620	-	-	17,100	-	270	-	12,300	-	-	-	-	230	89,880	-	-	18,170	1,050
Sutter	46,200	-	-	-	-	-	-	-	130	-	10,610	170	-	270	18,510	-	-	4,270	-	-	11,550	670
Tehama	31,700	-	-	-	-	-	-	290	-	5,660	-	-	-	8,140	-	-	7,100	-	150	10,400	-	-
Trinity	200	-	-	-	-	-	-	160	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tulare	264,300	-	460	-	500	-	-	78,000	1,870	14,990	13,610	19,050	450	490	17,310	1,690	69,490	17,290	750	10,110	18,020	210
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ventura	31,500	-	-	14,950	-	-	-	-	-	-	-	-	-	-	-	-	-	15,970	-	-	-	550
Yolo	32,900	-	-	-	-	-	-	14,120	-	330	-	-	5,160	-	1,960	-	-	8,540	-	-	6,550	1,760
Yuba	24,500	-	-	-	-	-	-	120	630	640	1,160	4,460	1,960	430	3,710	4,420	830	400	1,210	850	730	1,240
Other- not located	29,400	630	80	1,400	250	30	3,350	940	630	640	1,160	4,460	1,960	430	3,710	4,420	830	400	1,210	850	730	1,240
STATE TOTALS	2,622,000	23,300	15,500	58,400	9,500	2,900	14,600	1,135,600	4,200	42,600	28,800	106,200	19,500	2,400	#####	9,000	176,100	585,300	2,000	88,100	160,100	32,100

**Table 6: Technical Orchard and Vineyard Potential (BDT/yr) 2010**

County Name	Total Orchard and Vine	Apples	Apricots	Avocados	Cherries	Dates	Figs	Grapes	Kiwifruit	Nectarines	Olives	Peaches	Pears	Persimmons	Plums & Prunes	Pomegranates	All Citrus	Almonds	Pecans	Pistachios	Walnuts	Fruit and Nut Unspecified	
Alameda	2,300	-	-	-	-	-	-	2,200	-	-	-	-	-	-	-	-	-	-	-	-	-	70	
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Amador	3,800	-	-	-	-	-	-	3,600	-	-	-	-	-	-	-	-	-	-	-	-	-	220	
Butte	49,500	-	-	-	-	-	-	690	-	1,370	2,280	-	-	6,740	-	80	24,300	-	320	13,690	-	-	
Calaveras	1,100	40	-	-	-	-	-	600	-	110	-	-	-	-	-	-	-	-	-	-	-	370	
Colusa	23,800	-	-	-	-	-	-	-	-	-	-	-	-	1,090	-	-	18,200	-	-	2,200	2,330	-	
Contra Costa	3,200	240	450	-	80	-	-	1,900	-	30	-	150	-	-	30	-	-	-	-	-	240	120	
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
El Dorado	3,000	780	-	-	20	-	-	1,800	-	-	-	110	120	-	40	-	-	-	-	-	-	100	
Fresno	343,700	880	1,620	-	620	-	-	193,100	200	15,580	730	19,970	840	560	13,760	2,010	18,640	63,300	-	9,220	2,630	-	
Glenn	32,700	-	-	-	-	-	-	1,300	-	2,530	-	-	-	-	4,490	-	240	18,000	-	480	5,640	-	
Humboldt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Imperial	2,800	-	-	-	-	320	-	-	-	-	-	-	-	-	-	-	2,490	-	-	-	-	-	
Inyo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	
Kern	188,300	2,050	380	-	550	-	-	71,000	-	620	-	1,480	-	-	1,100	-	21,960	64,400	-	23,990	740	-	
Kings	36,700	-	660	-	-	-	-	6,800	-	2,040	-	5,600	-	-	1,330	-	-	6,500	-	5,100	4,070	4,560	
Lake	11,000	-	-	-	-	-	-	7,600	-	-	-	2,120	-	-	-	-	-	-	-	-	1,260	60	
Lassen	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Los Angeles	500	130	-	40	40	-	-	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Madera	142,000	470	-	-	-	-	5,710	76,600	-	390	950	1,110	-	-	1,120	-	1,680	39,600	-	12,380	620	1,370	
Marin	100	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mariposa	200	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	120	
Mendocino	18,200	250	-	-	-	-	-	15,700	-	-	-	-	-	2,020	-	-	-	-	-	-	-	240	
Merced	83,600	-	1,040	-	-	2,180	11,700	-	-	-	4,870	-	-	1,230	-	-	56,000	-	2,190	2,740	1,690		
Modoc	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Monterey	38,100	-	-	150	-	-	-	37,100	-	-	-	-	-	-	-	-	560	-	-	-	110	140	
Napa	41,200	-	-	-	-	-	-	41,000	-	-	150	-	-	-	-	-	-	-	-	-	50	-	
Nevada	400	-	-	-	-	-	-	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Orange	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	-	-	-	-	-	-	
Placer	1,500	40	-	-	-	-	-	200	-	-	-	80	40	-	240	-	70	-	-	-	840	-	
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Riverside	24,600	60	10	4,730	10	1,700	-	9,400	-	-	60	20	20	-	-	8,440	-	-	-	-	-	150	
Sacramento	32,100	250	-	-	130	-	-	24,800	-	-	-	6,140	-	-	-	-	-	-	-	-	-	760	
San Benito	6,100	360	860	-	140	-	-	3,700	-	-	-	-	-	-	-	-	-	-	-	-	890	150	
San Bernardino	2,600	250	-	-	130	-	-	700	-	-	-	-	-	-	-	1,270	-	-	200	-	90	-	
San Diego	23,700	400	-	16,580	-	-	-	300	-	-	-	-	280	-	-	5,680	-	-	-	-	-	410	-
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
San Joaquin	151,200	3,390	820	-	3,890	-	-	90,700	-	-	2,420	530	-	-	-	28,000	-	-	20,450	-	990	-	
San Luis Obispo	39,800	-	-	2,350	-	-	-	33,700	-	-	-	-	-	-	-	830	-	-	1,090	1,800	-	-	
San Mateo	100	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	40	
Santa Barbara	27,400	-	-	5,480	-	-	-	20,300	-	-	-	-	-	-	-	760	-	-	-	-	820	-	
Santa Clara	2,400	-	260	-	230	-	-	1,700	-	-	-	-	-	60	-	-	-	-	-	100	90	-	
Santa Cruz	3,300	2,480	-	-	-	-	-	600	-	-	-	-	-	-	-	-	-	-	-	-	220	-	
Shasta	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	430	-	
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Siskiyou	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Solano	10,900	-	-	-	20	-	-	4,200	-	-	130	-	-	880	-	-	1,300	-	-	3,440	950	-	
Sonoma	56,800	2,790	-	-	-	-	-	54,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Stanislaus	103,100	980	4,380	-	430	-	-	12,000	-	190	-	8,610	-	7,430	120	190	12,960	-	160	62,900	-	12,720	740
Sutter	32,400	-	-	-	-	-	-	90	-	-	-	-	-	-	-	-	-	-	3,000	-	8,090	470	
Tehama	22,300	-	-	-	-	-	-	200	-	-	3,960	-	-	-	-	5,700	-	-	5,000	-	110	7,280	-
Trinity	100	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tulare	185,000	-	320	-	350	-	-	54,600	1,310	10,490	9,530	13,340	320	340	12,120	1,180	48,640	12,100	530	7,080	12,610	150	
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ventura	22,000	-	-	10,470	-	-	-	9,900	-	-	-	-	-	-	-	-	11,180	-	-	-	-	390	-
Yolo	23,100	-	-	-	-	-	-	100	230	-	-	3,610	-	-	1,370	-	-	6,000	-	-	4,590	1,230	-
Yuba	17,200	-	-	-	-	-	-	-	-	-	-	-	-	6,680	-	-	700	-	-	4,400	1,440	-	
Other- not located	20,600	440	60	980	180	20	2,350	700	440	450	810	3,120	1,370	300	2,600	3,090	580	300	850	600	510	870	-
STATE TOTALS	1,835,000	16,300	10,900	40,900	6,700	2,000	10,200	794,900	3,000	29,800	20,100	74,400	13,600	1,700	73,500	6,300	123,300	409,600	1,400	61,700	112,100	22,500	

**Table 7: Gross Orchard and Vineyard Biomass (BDT/yr) 2017**

County Name	Total Orchard & Vine	Apples	Apricots	Avocados	Cherries	Dates	Figs	Grapes	Kiwifruit	Nectarines	Olives	Peaches	Pears	Persimmons	Plums & Prunes	Pomegranates	All Citrus	Almonds	Pecans	Pistachios	Walnuts	Fruit and Nut Unspecified	
Alameda	3,850	-	-	-	-	-	-	3,750	-	-	-	-	-	-	-	-	-	-	-	-	-	100	
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Amador	6,320	-	-	-	-	-	-	6,000	-	-	-	-	-	-	-	-	-	-	-	-	320	-	
Butte	78,200	-	-	-	-	-	-	730	-	2,220	3,630	-	-	8,890	-	110	41,360	-	600	20,660	-		
Calaveras	1,750	40	-	-	-	-	-	980	-	-	170	-	-	-	-	-	-	-	-	-	560	-	
Colusa	39,110	-	-	-	-	-	-	-	-	-	-	-	-	1,440	-	-	31,020	-	-	-	3,320	3,330	
Contra Costa	5,070	280	590	-	200	-	-	3,150	-	50	-	230	-	-	40	-	-	-	-	-	360	170	
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
El Dorado	4,470	910	-	-	40	-	-	3,030	-	-	-	160	140	-	40	-	-	-	-	-	150	-	
Fresno	566,320	1,030	2,120	-	1,560	-	-	322,600	210	26,800	1,180	31,890	950	800	18,140	2,870	27,380	107,680	-	17,140	3,970	-	
Glenn	52,560	-	-	-	-	-	-	2,130	-	-	4,100	-	-	-	5,910	-	350	30,680	-	890	8,500	-	
Humboldt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Imperial	4,120	-	-	-	-	-	460	-	-	-	-	-	-	-	-	-	3,660	-	-	-	-	-	
Inyo	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	
Kern	315,260	2,390	490	-	1,360	-	-	118,660	-	1,070	-	2,370	-	-	1,440	-	32,250	109,530	-	44,590	1,110	-	
Kings	59,680	-	860	-	-	-	-	11,320	-	3,510	-	8,950	-	-	1,760	-	-	11,140	-	9,480	6,140	6,520	
Lake	17,130	-	-	-	-	-	-	12,740	-	-	-	-	-	2,400	-	-	-	-	-	-	1,900	90	
Lassen	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Los Angeles	850	160	-	50	90	-	-	550	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Madera	237,270	550	-	-	-	-	-	7,620	127,930	-	680	1,540	1,780	-	-	1,480	-	2,470	67,330	-	23,010	930	1,950
Marin	190	-	-	-	-	-	-	-	190	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mariposa	330	-	-	-	-	-	-	-	160	-	-	-	-	-	-	-	-	-	-	-	-	170	
Mendocino	29,140	290	-	-	-	-	-	-	26,230	-	-	-	-	2,280	-	-	-	-	-	-	-	340	
Merced	139,080	-	1,370	-	-	-	-	2,910	19,590	-	-	-	7,790	-	-	1,610	-	-	95,180	-	4,080	4,130	2,420
Modoc	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Monterey	63,390	-	-	180	-	-	-	-	62,030	-	-	-	-	-	-	-	820	-	-	-	160	200	
Napa	68,900	-	-	-	-	-	-	-	68,570	-	250	-	-	-	-	-	-	-	-	-	80	-	
Nevada	590	-	-	-	-	-	-	-	590	-	-	-	-	-	-	-	-	-	-	-	-	-	
Orange	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	
Placer	2,200	50	-	-	-	-	-	310	-	-	-	130	40	-	310	-	100	-	-	-	1,260	-	
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Riverside	36,760	70	20	5,760	20	2,430	-	15,690	-	-	-	110	20	30	-	-	12,400	-	-	-	-	210	
Sacramento	50,110	290	-	-	330	-	-	-	41,440	-	-	-	-	6,960	-	-	-	-	-	-	-	1,090	
San Benito	9,610	420	1,130	-	360	-	-	-	6,150	-	-	-	-	-	-	-	-	-	-	-	1,340	210	
San Bernardino	3,990	280	-	-	160	-	-	-	1,180	-	-	-	-	-	-	1,860	-	-	380	-	130		
San Diego	30,460	460	-	20,180	-	-	-	-	500	-	-	-	-	400	-	-	8,330	-	-	-	590	-	
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
San Joaquin	250,760	3,960	1,070	-	9,710	-	-	151,580	-	-	-	3,860	600	-	-	-	47,710	-	-	30,850	1,420	-	
San Luis Obispo	64,620	-	-	2,860	-	-	-	-	56,340	-	-	-	-	-	-	-	1,220	-	-	-	1,630	2,570	
San Mateo	210	-	-	-	-	-	-	-	150	-	-	-	-	-	-	-	-	-	-	-	60	-	
Santa Barbara	42,830	-	-	6,680	-	-	-	-	33,860	-	-	-	-	-	-	-	1,120	-	-	-	1,170	-	
Santa Clara	4,120	-	330	-	580	-	-	-	2,850	-	-	-	-	-	80	-	-	-	-	-	150	130	
Santa Cruz	4,180	2,890	-	-	-	-	-	-	980	-	-	-	-	-	-	-	-	-	-	-	310	-	
Shasta	650	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	650	-	
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Siskiyou	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Solano	17,210	-	-	40	-	-	-	6,980	-	-	-	210	-	-	1,150	-	-	2,280	-	-	5,190	1,360	
Sonoma	93,490	3,260	-	-	-	-	-	-	90,230	-	-	-	-	-	-	-	-	-	-	-	-	-	
Stanislaus	169,550	1,150	5,730	-	1,090	-	-	19,990	-	330	-	13,750	-	-	-	240	107,030	-	-	19,190	1,050	-	
Sutter	47,400	-	-	-	-	-	-	-	100	-	-	11,870	140	270	17,080	-	-	5,080	-	-	12,190	670	
Tehama	33,900	-	-	-	-	-	-	-	340	-	6,410	-	-	-	7,520	-	-	8,460	-	190	10,980	-	
Trinity	190	-	-	-	-	-	-	-	190	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tulare	292,350	-	420	-	870	-	-	91,200	1,390	18,040	15,430	21,290	360	490	15,980	1,690	71,450	20,580	770	13,150	19,030	210	
Tuolumne	-	-	-	12,740	-	-	-	-	-	-	-	-	-	-	-	-	16,420	-	-	-	-	550	
Ventura	29,710	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Yolo	37,160	-	-	-	-	-	-	-	16,510	-	-	-	-	-	-	1,810	-	-	10,160	-	-	6,920	1,760
Yuba	24,850	-	-	-	-	-	-	-	140	240	-	-	5,770	-	-	8,800	-	-	1,210	-	-	6,640	2,050
Other- not located	29,530	520	70	1,190	440	30	3,130	1,100	470	770	1,320	4,980	1,550	430	3,420	4,420	850	470	1,250	1,110	770	1,240	
STATE TOTALS	2,970,000	19,000	14,200	49,800	16,700	2,900	13,700	1,327,900	3,100	51,300	32,600	118,800	15,400	2,400	96,900	9,000	181,100	696,900	2,000	114,600	169,100	32,100	

**Table 8: Technical Orchard and Vineyard Potential (BDT/yr) 2017**

County Name	Total Orchard and Vine	Apples	Apricots	Avocados	Cherries	Dates	Figs	Grapes	Kiwifruit	Nectarines	Olives	Peaches	Pears	Persimmons	Plums & Prunes	Pomegranates	All Citrus	Almonds	Pecans	Pistachios	Walnuts	Fruit and Nut Unspecified	
Alameda	2,700	-	-	-	-	-	-	2,600	-	-	-	-	-	-	-	-	-	-	-	-	-	70	
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Amador	4,400	-	-	-	-	-	-	4,200	-	-	-	-	-	-	-	-	-	-	-	-	-	220	
Butte	54,700	-	-	-	-	-	-	-	510	-	1,550	2,540	-	-	6,220	-	80	28,950	-	420	14,460	-	
Calaveras	1,200	30	-	-	-	-	-	700	-	-	120	-	-	-	-	-	-	-	-	-	-	390	
Colusa	27,400	-	-	-	-	-	-	-	-	-	-	-	-	-	1,010	-	-	21,710	-	-	2,320	2,330	
Contra Costa	3,600	200	410	-	140	-	-	2,200	-	40	-	160	-	-	30	-	-	-	-	-	250	120	
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
El Dorado	3,100	640	-	-	-	30	-	-	2,100	-	-	110	100	-	-	30	-	-	-	-	-	110	
Fresno	396,400	720	1,480	-	1,090	-	-	225,800	150	18,760	830	22,320	670	560	12,700	2,010	19,170	75,380	-	12,000	2,780	-	
Glenn	36,800	-	-	-	-	-	-	-	1,500	-	2,870	-	-	-	4,140	-	-	250	21,480	-	620	5,950	
Humboldt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Imperial	2,900	-	-	-	-	320	-	-	-	-	-	-	-	-	-	-	-	2,560	-	-	-	-	
Inyo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	
Kern	220,700	1,670	340	-	950	-	-	83,100	-	750	-	1,660	-	-	1,010	-	22,580	76,670	-	31,210	780	-	
Kings	41,800	-	600	-	-	-	-	-	7,900	-	2,460	-	6,270	-	-	1,230	-	-	7,800	-	6,640	4,300	4,560
Lake	12,000	-	-	-	-	-	-	-	8,900	-	-	-	-	1,680	-	-	-	-	-	-	1,330	60	
Lassen	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Los Angeles	600	110	-	40	60	-	-	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Madera	166,200	390	-	-	-	-	5,330	89,600	-	480	1,080	1,250	-	-	1,040	-	1,730	47,130	-	16,110	650	1,370	
Marin	100	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mariposa	200	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	120	
Mendocino	20,400	200	-	-	-	-	-	-	18,400	-	-	-	-	1,600	-	-	-	-	-	-	-	240	
Merced	97,400	-	960	-	-	-	2,040	13,700	-	-	-	5,450	-	-	1,130	-	-	66,630	-	2,860	2,890	1,690	
Modoc	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Monterey	44,400	-	-	130	-	-	-	-	43,400	-	-	-	-	-	-	-	570	-	-	-	110	140	
Napa	48,200	-	-	-	-	-	-	-	48,000	-	180	-	-	-	-	-	-	-	-	-	60	-	
Nevada	400	-	-	-	-	-	-	-	400	-	-	-	-	-	-	-	-	-	-	-	-	-	
Orange	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	-	-	-	-	-	-	
Placer	1,500	40	-	-	-	-	-	200	-	-	90	30	-	220	-	70	-	-	-	-	880	-	
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Riverside	25,700	50	10	4,030	10	1,700	-	11,000	-	-	80	10	20	-	-	8,680	-	-	-	-	-	150	
Sacramento	35,100	200	-	-	230	-	-	29,000	-	-	-	4,870	-	-	-	-	-	-	-	-	-	760	
San Benito	6,700	290	790	-	-	250	-	-	4,300	-	-	-	-	-	-	-	-	-	-	-	940	150	
San Bernardino	2,800	200	-	-	110	-	-	-	800	-	-	-	-	-	-	1,300	-	-	270	-	90	-	
San Diego	21,400	320	-	-	14,130	-	-	400	-	-	-	-	280	-	5,830	-	-	-	-	-	410	-	
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
San Joaquin	175,500	2,770	750	-	6,800	-	-	106,100	-	-	2,700	420	-	-	-	33,400	-	-	21,600	990	-	-	
San Luis Obispo	45,200	-	-	2,000	-	-	-	39,400	-	-	-	-	-	-	850	-	-	1,140	1,800	-	-	-	
San Mateo	100	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	40	
Santa Barbara	30,000	-	-	4,680	-	-	-	23,700	-	-	-	-	-	-	-	780	-	-	-	-	820	-	
Santa Clara	2,900	-	230	-	410	-	-	2,000	-	-	-	-	-	60	-	-	-	-	-	-	110	90	
Santa Cruz	2,900	2,020	-	-	-	-	-	700	-	-	-	-	-	-	-	-	-	-	-	-	-	220	
Shasta	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	460	-	
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Siskiyou	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Solano	12,100	-	-	-	30	-	-	4,900	-	-	150	-	-	810	-	-	1,600	-	-	3,630	950	-	
Sonoma	65,500	2,280	-	-	-	-	-	63,200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Stanislaus	118,700	810	4,010	-	760	-	-	14,000	-	230	-	9,630	-	-	-	170	74,920	-	-	13,430	740	-	
Sutter	33,200	-	-	-	-	-	-	-	70	-	-	8,310	100	190	11,960	-	-	3,560	-	8,530	470	-	
Tehama	23,700	-	-	-	-	-	-	-	200	-	4,490	-	-	-	5,260	-	-	5,920	-	130	7,690	-	
Trinity	100	-	-	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tulare	204,600	-	290	-	610	-	-	63,800	970	12,630	10,800	14,900	250	340	11,190	1,180	50,020	14,410	540	9,210	13,320	150	
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ventura	20,800	-	-	8,920	-	-	-	-	-	-	-	-	-	-	-	11,490	-	-	-	-	-	390	-
Yolo	26,100	-	-	-	-	-	-	-	11,600	-	-	-	-	-	-	1,270	-	-	7,110	-	4,840	1,230	-
Yuba	17,400	-	-	-	-	-	-	-	100	170	-	-	4,040	-	-	6,160	-	-	850	-	4,650	1,440	-
Other- not located	20,700	360	50	830	310	20	2,190	800	330	540	920	3,490	1,090	300	2,390	3,090	600	330	880	780	540	870	-
STATE TOTALS	2,079,000	13,300	9,900	34,900	11,700	2,000	9,600	929,500	2,200	35,900	22,800	83,200	10,800	1,700	67,900	6,300	126,800	487,900	1,400	80,300	118,400	22,500	

**Table 9: Gross Orchard and Vineyard Biomass (BDT/yr) 2020**

County Name	Total Orchard & Vine	Apples	Apricots	Avocados	Cherries	Dates	Figs	Grapes	Kiwifruit	Nectarines	Olives	Peaches	Pears	Persimmons	Plums & Prunes	Pomegranates	All Citrus	Almonds	Pecans	Pistachios	Walnuts	Fruit and Nut Unspecified	
Alameda	4,100	-	-	-	-	-	-	4,010	-	-	-	-	-	-	-	-	-	-	-	-	-	100	
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Amador	6,800	-	-	-	-	-	-	-	6,420	-	-	-	-	-	-	-	-	-	-	-	-	330	
Butte	81,900	-	-	-	-	-	-	-	640	-	2,350	3,810	-	-	8,590	-	120	44,570	-	670	21,150	-	
Calaveras	1,800	40	-	-	-	-	-	-	1,040	-	-	180	-	-	-	-	-	-	-	-	-	580	
Colusa	41,600	-	-	-	-	-	-	-	-	-	-	-	-	-	1,390	-	-	33,430	-	-	3,400	3,330	
Contra Costa	5,300	250	570	-	250	-	-	3,370	-	60	-	250	-	-	30	-	-	-	-	-	370	170	
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
El Dorado	4,600	830	-	-	60	-	-	-	3,240	-	-	170	120	-	-	40	-	-	-	-	-	150	
Fresno	602,900	940	2,040	-	1,980	-	-	344,960	180	29,020	1,250	33,450	860	800	17,530	2,870	27,710	116,050	-	19,180	4,060	-	
Glenn	55,400	-	-	-	-	-	-	-	2,270	-	4,330	-	-	-	5,710	-	360	33,070	-	990	8,700	-	
Humboldt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Imperial	4,200	-	-	-	-	-	460	-	-	-	-	-	-	-	-	-	3,710	-	-	-	-	-	
Inyo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	
Kern	338,000	2,190	470	-	1,720	-	-	-	126,890	-	1,160	-	2,480	-	-	1,400	-	32,640	118,040	-	49,910	1,140	-
Kings	63,200	-	830	-	-	-	-	-	12,100	-	3,800	-	9,380	-	-	1,700	-	-	12,000	-	10,610	6,290	6,520
Lake	17,800	-	-	-	-	-	-	-	13,620	-	-	-	-	-	2,180	-	-	-	-	-	-	90	
Lassen	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Los Angeles	900	140	-	40	110	-	-	-	590	-	-	-	-	-	-	-	-	-	-	-	-	-	
Madera	254,100	500	-	-	-	-	-	7,410	136,800	-	730	1,630	1,870	-	-	1,430	-	2,500	72,570	-	25,750	950	1,950
Marin	200	-	-	-	-	-	-	-	200	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mariposa	300	-	-	-	-	-	-	-	170	-	-	-	-	-	-	-	-	-	-	-	-	170	
Mendocino	30,700	270	-	-	-	-	-	-	28,050	-	-	-	-	-	2,070	-	-	-	-	-	-	340	
Merced	148,600	-	1,310	-	-	-	-	2,820	20,950	-	-	-	8,170	-	-	1,560	-	-	102,580	-	4,560	4,230	2,420
Modoc	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Monterey	67,700	-	-	160	-	-	-	-	66,330	-	-	-	-	-	-	-	-	830	-	-	170	200	
Napa	73,700	-	-	-	-	-	-	-	73,330	-	-	270	-	-	-	-	-	-	-	-	-	80	
Nevada	600	-	-	-	-	-	-	-	630	-	-	-	-	-	-	-	-	-	-	-	-	-	
Orange	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-	-	
Placer	2,300	50	-	-	-	-	-	-	330	-	-	140	40	-	300	-	110	-	-	-	-	1,290	
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Riverside	37,600	60	20	5,380	30	2,430	-	-	16,780	-	-	110	20	30	-	-	12,550	-	-	-	-	-	210
Sacramento	52,400	270	-	-	420	-	-	-	44,310	-	-	-	-	6,300	-	-	-	-	-	-	-	1,090	
San Benito	10,100	380	1,090	-	450	-	-	-	6,580	-	-	-	-	-	-	-	-	-	-	-	-	1,370	
San Bernardino	4,100	260	-	150	-	-	-	-	1,260	-	-	-	-	-	-	-	1,880	-	420	-	-	130	
San Diego	29,200	430	-	18,840	-	-	-	-	530	-	-	-	-	400	-	-	8,430	-	-	-	-	590	
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
San Joaquin	268,100	3,630	1,030	-	12,340	-	-	-	162,090	-	-	4,050	550	-	-	-	-	51,420	-	-	31,580	1,420	
San Luis Obispo	68,400	-	-	2,670	-	-	-	-	60,250	-	-	-	-	-	-	-	1,230	-	-	-	1,670	2,570	
San Mateo	200	-	-	-	-	-	-	-	160	-	-	-	-	-	-	-	-	-	-	-	-	60	
Santa Barbara	44,800	-	-	6,230	-	-	-	-	36,210	-	-	-	-	-	-	-	1,140	-	-	-	-	1,170	
Santa Clara	4,500	-	320	-	730	-	-	-	3,050	-	-	-	-	-	80	-	-	-	-	-	-	150	
Santa Cruz	4,000	2,650	-	-	-	-	-	-	1,040	-	-	-	-	-	-	-	-	-	-	-	-	310	
Shasta	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	660	
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Siskiyou	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Solano	18,000	-	-	60	-	-	-	-	7,460	-	-	220	-	-	1,110	-	-	2,460	-	-	5,310	1,360	
Sonoma	99,500	2,990	-	-	-	-	-	-	96,480	-	-	-	-	-	-	-	-	-	-	-	-	-	
Stanislaus	180,400	1,050	5,510	-	1,380	-	-	-	21,380	-	350	-	14,430	-	-	-	240	115,340	-	-	19,640	1,050	
Sutter	48,100	-	-	-	-	-	-	-	-	90	-	-	12,450	120	270	16,500	-	-	5,480	-	-	12,480	
Tehama	34,900	-	-	-	-	-	-	-	360	-	-	6,760	-	-	-	7,260	-	-	9,110	-	210	11,240	
Trinity	200	-	-	-	-	-	-	-	200	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tulare	306,000	-	410	-	1,100	-	-	-	97,530	1,220	19,530	16,280	22,330	320	490	15,440	1,690	72,300	22,180	780	14,720	19,480	
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ventura	29,100	-	-	11,890	-	-	-	-	-	-	-	-	-	-	-	-	16,610	-	-	-	-	550	
Yolo	39,200	-	-	-	-	-	-	-	17,650	-	-	-	-	-	-	1,750	-	-	10,950	-	-	7,080	
Yuba	25,100	-	-	-	-	-	-	-	-	150	210	-	6,050	-	-	8,500	-	-	1,300	-	-	6,790	
Other-not located	29,800	470	70	1,110	560	30	3,050	1,180	410	830	1,390	5,230	1,400	430	3,310	4,420	860	510	1,260	1,240	790	1,240	
STATE TOTALS	3,141,000	17,400	13,700	46,500	21,200	2,900	13,300	1,420,000	2,800	55,500	34,400	124,600	14,000	2,400	93,600	9,000	183,300	751,100	2,000	128,300	173,100	32,100	

**Table 10: Technical Orchard and Vineyard Potential (BDT/yr) 2020**

County Name	Total Orchard and Vine	Apples	Apricots	Avocados	Cherries	Dates	Figs	Grapes	Kiwifruit	Nectarines	Olives	Peaches	Pears	Persimmons	Plums & Prunes	Pomegranates	All Citrus	Almonds	Pecans	Pistachios	Walnuts	Fruit and Nut Unspecified	
Alameda	2,900	-	-	-	-	-	-	2,810	-	-	-	-	-	-	-	-	-	-	-	-	-	70	
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Amador	4,700	-	-	-	-	-	-	4,490	-	-	-	-	-	-	-	-	-	-	-	-	-	230	
Butte	57,300	-	-	-	-	-	-	-	450	-	1,650	2,670	-	-	6,010	-	80	31,200	-	470	14,810	-	
Calaveras	1,300	30	-	-	-	-	-	730	-	130	-	-	-	-	-	-	-	-	-	-	410	-	
Colusa	29,100	-	-	-	-	-	-	-	-	-	-	-	-	-	970	-	-	23,400	-	-	2,380	2,330	
Contra Costa	3,700	180	400	-	180	-	-	2,360	-	40	-	180	-	-	20	-	-	-	-	-	260	120	
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
El Dorado	3,200	580	-	-	40	-	-	2,270	-	-	-	120	80	-	30	-	-	-	-	-	110	-	
Fresno	422,000	660	1,430	-	1,390	-	-	241,470	130	20,310	880	23,420	600	560	12,270	2,010	19,400	81,240	-	13,430	2,840	-	
Glenn	38,800	-	-	-	-	-	-	1,590	-	3,030	-	-	-	-	4,000	-	250	23,150	-	690	6,090	-	
Humboldt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Imperial	2,900	-	-	-	-	320	-	-	-	-	-	-	-	-	-	-	2,600	-	-	-	-	-	
Inyo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	
Kern	236,600	1,530	330	-	1,200	-	-	88,820	-	810	-	1,740	-	-	980	-	22,850	82,630	-	34,940	800	-	
Kings	44,300	-	580	-	-	-	-	8,470	-	2,660	-	6,570	-	-	1,190	-	-	8,400	-	7,430	4,400	4,560	
Lake	12,500	-	-	-	-	-	-	9,530	-	-	-	-	1,530	-	-	-	-	-	-	-	1,370	60	
Lassen	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Los Angeles	600	100	-	30	80	-	-	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Madera	177,900	350	-	-	-	-	-	5,190	95,760	-	510	1,140	1,310	-	1,000	-	1,750	50,800	-	18,030	670	1,370	
Marin	100	-	-	-	-	-	-	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mariposa	200	-	-	-	-	-	-	120	-	-	-	-	-	-	-	-	-	-	-	-	-	120	
Mendocino	21,500	190	-	-	-	-	-	19,640	-	-	-	-	1,450	-	-	-	-	-	-	-	-	240	
Merced	104,000	-	920	-	-	-	-	1,970	14,670	-	-	5,720	-	-	1,090	-	-	71,810	-	3,190	2,960	1,690	
Modoc	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Monterey	47,400	-	-	110	-	-	-	46,430	-	-	-	-	-	-	-	-	580	-	-	-	120	140	
Napa	51,600	-	-	-	-	-	-	51,330	-	-	190	-	-	-	-	-	-	-	-	-	60	-	
Nevada	400	-	-	-	-	-	-	440	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Orange	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	-	-	-	-	-	
Placer	1,600	40	-	-	-	-	-	230	-	-	-	100	30	-	210	-	80	-	-	-	900	-	
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Riverside	26,300	40	10	3,770	20	1,700	-	11,750	-	-	80	10	20	-	-	8,790	-	-	-	-	-	150	
Sacramento	36,700	190	-	-	290	-	-	31,020	-	-	-	4,410	-	-	-	-	-	-	-	-	-	760	
San Benito	7,100	270	760	-	320	-	-	4,610	-	-	-	-	-	-	-	-	-	-	-	-	960	150	
San Bernardino	2,900	180	-	110	-	-	-	880	-	-	-	-	-	-	-	1,320	-	-	290	-	90	-	
San Diego	20,500	300	-	13,190	-	-	-	370	-	-	-	-	280	-	-	5,900	-	-	-	-	-	410	-
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
San Joaquin	187,700	2,540	720	-	8,640	-	-	113,460	-	-	2,840	390	-	-	-	35,990	-	-	22,110	990	-	-	
San Luis Obispo	47,900	-	-	1,870	-	-	-	42,180	-	-	-	-	-	-	-	860	-	-	-	1,170	1,800	-	
San Mateo	200	-	-	-	-	-	-	110	-	-	-	-	-	-	-	-	-	-	-	-	-	40	
Santa Barbara	31,300	-	-	4,360	-	-	-	25,350	-	-	-	-	-	-	-	800	-	-	-	-	-	820	-
Santa Clara	3,100	-	220	-	510	-	-	2,140	-	-	-	-	-	60	-	-	-	-	-	-	110	90	-
Santa Cruz	2,800	1,860	-	-	-	-	-	730	-	-	-	-	-	-	-	-	-	-	-	-	-	220	
Shasta	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	460	-
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Siskiyou	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solano	12,600	-	-	40	-	-	-	5,220	-	-	150	-	-	780	-	-	1,720	-	-	3,720	950	-	
Sonoma	69,600	2,090	-	-	-	-	-	67,540	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stanislaus	126,300	740	3,860	-	970	-	-	14,970	-	250	-	10,100	8,720	80	190	11,550	-	-	170	80,740	-	13,750	740
Sutter	33,700	-	-	-	-	-	-	-	60	-	-	-	-	-	-	-	1,230	-	-	3,840	-	8,740	470
Tehama	24,500	-	-	-	-	-	-	-	250	-	4,730	-	-	-	-	5,080	-	-	6,380	-	150	7,870	-
Trinity	100	-	-	-	-	-	-	-	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tulare	214,200	-	290	-	770	-	-	68,270	850	13,670	11,400	15,630	220	340	10,810	1,180	50,610	15,530	550	10,300	13,640	150	
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ventura	20,300	-	-	8,320	-	-	-	-	-	-	-	-	-	-	-	-	-	11,630	-	-	-	390	-
Yolo	27,500	-	-	-	-	-	-	12,360	-	-	-	-	-	-	-	1,230	-	-	7,670	-	-	4,960	1,230
Yuba	17,600	-	-	-	-	-	-	-	110	150	-	-	4,240	-	-	5,950	-	-	910	-	-	4,750	1,440
Other- not located	20,900	330	50	780	390	20	2,140	830	290	580	970	3,660	980	300	2,320	3,090	600	360	880	870	550	870	-
STATE TOTALS	2,199,000	12,200	9,600	32,500	14,800	2,000	9,300	994,000	1,900	38,800	24,100	87,300	9,800	1,700	65,600	6,300	128,300	525,800	1,400	89,800	121,200	22,500	

## 2.1.2 Field and Seed Crops

California has about 5.2 million acres in field and seed crops. Gross quantities (BDT/y) of residual biomass from field and seed crops were estimated in the same manner as for orchard and vineyard crops. Yield factors and historical growth rates for crops considered are listed in Table 11. Silage and hay crops were assumed to yield no harvestable residue biomass. Biomass from corn and sorghum are for grain crops only. Distribution within the state is shown in Figure 2.

**Table 11: Residue Yield Factors and Historical Growth Rates (1994-2003) for Field and Seed Crops**

Biomass Type	Wet Basis	Moisture	Dry Basis	Growth rates (%/y)
	Conversion Factor (tons/acre-y)	Content (% wet basis)	Conversion Factor (tons/acre-y)	
Corn	4.7	14	4.04	-1.24
Sorghum	2.2	14	1.92	1.00
Wheat	1.9	14	1.63	0.56
Barley	1.3	14	1.12	-6.33
Oats	1.2	14	1.03	-1.42
Rice	3.5	14	3.01	1.94
Safflower	0.9	14	0.73	0.00
Sunflower	0.9	14	0.73	0.00
Cotton	1.5	14	1.29	-4.91
Beans	1.0	14	0.86	-1.68
Lima Beans	1.0	14	0.86	-1.68
Cowpeas & Southern Peas	1.0	14	0.86	-1.68
Potatoes	1.2	0	1.20	0.38
Sweetpotatoes	1.2	0	1.20	2.28
Sugar Beets	2.4	14	2.06	-9.62
Unspecified Field & Seed	1.0	14	0.86	0.00
Alfalfa Seed	1.0	14	0.86	1.74
Bermuda Grass Seed	1.0	14	0.86	1.74

Resource quantities for 2007 to 2020 were again projected from base year data using escalation rates derived from production trends over the previous 10 years as listed in Table 11. This estimation method results in a slight decline in gross biomass over the period.

Technical residue availability factors are listed in Table 12. For crops producing straw and stover residues, half of the gross production was considered to be available after accounting for harvesting and handling losses. Field studies conducted on rice straw, for example, show that typical harvest yields are about two-thirds of total straw yields.<sup>4</sup> Accounting for additional losses suggests a technical availability of about half the total residue biomass. For crops generating higher moisture leaf and vine residues, only 5% was considered to be available. In most cases such residues would be incorporated

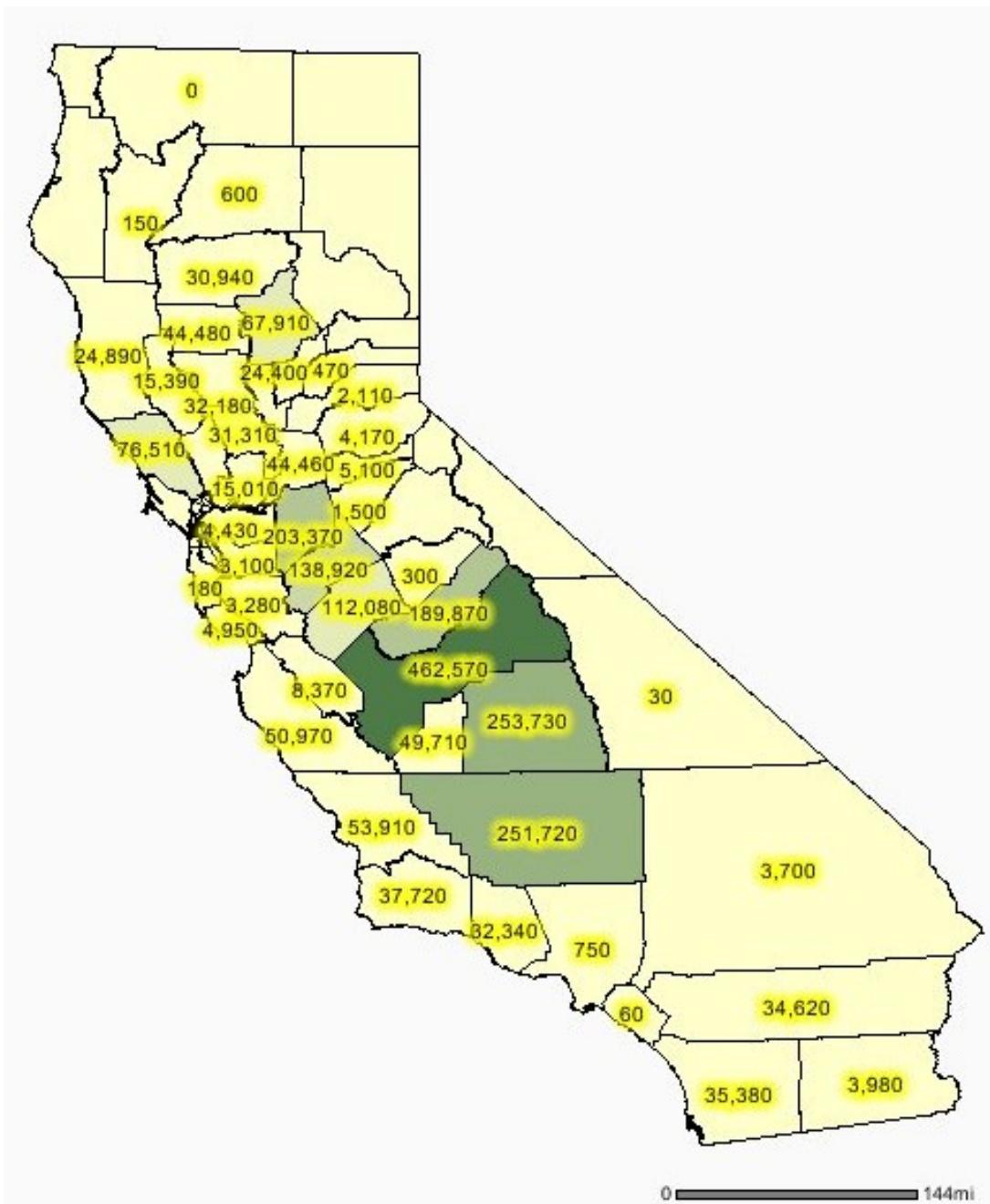
<sup>4</sup> Jenkins, B.M., R. Bakker-Dhaliwal, M.D. Summers, L.G. Bernheim, H. Lee, W. Huisman and L. Yan. 2000. Equipment performance, costs, and constraints in the commercial harvesting of rice straw for industrial applications. ASAE Paper No. 006035, ASAE, St. Joseph, MI 49085-9659.

into the soil. Estimated gross and technical biomass quantities for each crop type by county are listed in Tables 13 - 20 for years 2007, 2010, 2017, and 2020.

**Table 12: Technical Availability Factors Assumed for Field and Seed Crop Residues, 2007-2020.**

Biomass Type	2005 (--)	2010 (--)	2017 (--)	2020 (--)
Corn	0.5	0.5	0.5	0.5
Sorghum	0.5	0.5	0.5	0.5
Wheat	0.5	0.5	0.5	0.5
Barley	0.5	0.5	0.5	0.5
Oats	0.5	0.5	0.5	0.5
Rice	0.5	0.5	0.5	0.5
Safflower	0.5	0.5	0.5	0.5
Sunflower	0.5	0.5	0.5	0.5
Cotton	0.5	0.5	0.5	0.5
Beans	0.5	0.5	0.5	0.5
Lima Beans	0.5	0.5	0.5	0.5
Cowpeas & Southern Peas	0.5	0.5	0.5	0.5
Potatoes	0.05	0.05	0.05	0.05
Sweetpotatoes	0.05	0.05	0.05	0.05
Sugar Beets	0.05	0.05	0.05	0.05
Unspecified Field & Seed	0.5	0.5	0.5	0.5
Alfalfa Seed	0.5	0.5	0.5	0.5
Bermuda Grass Seed	0.5	0.5	0.5	0.5

**Figure 2: Field and Seed Crop Biomass (gross BDT/yr) in California, 2007**



**Table 13: Gross Field and Seed Crop Biomass (BDT/yr), 2007**

County Name	Total Field and Seed	Corn Silage	Corn	Sorghum	Wheat	Barley	Oats	Rice	Safflower	Sunflower	Cotton	Beans	Lima Beans	Peas	Potatoes	Sweet potatoes	Sugar Beets	Unspecified Field & Seed	Alfalfa Seed	Grass Seed	All Hay (alfalfa, grain, tame, wild green chop)	combined Seed	combined Rye (new)	Silage (Other)	
Alameda	270	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	270	-	-	-	-	-		
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Amador	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	-	-	-	-	-		
Butte	336,960	-	-	-	4,410	-	-	331,600	110	-	-	840	-	-	-	-	-	-	-	-	-	-	-		
Calaveras	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	-	-	-	-	-		
Colusa	497,710	-	1,660	-	24,220	-	-	448,900	2,810	-	3,510	5,790	-	-	-	-	-	-	-	-	-	10,820	-		
Contra Costa	29,480	-	23,000	-	4,120	-	-	-	530	-	-	270	-	-	-	-	-	1,560	-	-	-	-	-		
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
El Dorado	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Fresno	392,820	-	20,610	-	66,180	21,020	-	10,800	-	-	236,350	3,670	-	-	-	22,910	-	6,560	-	-	4,720	-	-		
Glenn	307,620	-	25,300	-	10,440	2,370	-	257,100	180	-	3,960	2,990	-	-	-	-	-	-	-	-	-	5,280	-		
Humboldt	900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	900		
Imperial	190,190	-	-	-	47,190	-	-	-	-	-	21,180	-	-	-	1,790	-	48,310	7,480	14,480	28,290	-	21,470	-		
Inyo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Kern	412,190	-	-	-	147,060	4,700	-	-	880	-	140,200	3,380	-	32,990	-	7,940	-	-	-	-	1,940	-	73,100		
Kings	412,070	-	-	-	92,370	-	-	-	-	-	213,520	2,300	-	-	-	3,410	45,320	-	-	-	18,840	-	36,310		
Lake	1,890	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,890	-	-	-	-	-	-		
Lassen	2,710	-	-	-	2,000	220	-	-	-	-	-	-	-	-	-	-	-	220	-	-	140	130	-		
Los Angeles	1,440	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Madera	43,390	-	3,230	-	4,900	-	-	-	-	-	13,160	430	-	-	-	-	-	-	-	-	-	18,060	-		
Marin	1,470	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,470		
Mariposa	600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	600	-	-	-	-	-		
Mendocino	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Merced	199,740	-	17,090	-	15,060	3,390	-	7,700	-	-	72,980	1,350	3,170	-	-	14,430	5,110	1,920	-	-	1,890	-	55,650		
Modoc	21,900	-	-	-	14,710	1,150	380	-	-	-	-	-	-	-	5,660	-	-	-	-	-	-	-	-		
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Monterey	23,500	-	-	-	1,990	12,470	-	-	-	-	-	3,790	-	1,320	-	-	-	2,190	-	-	1,740	-	-		
Napa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Orange	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Placer	30,950	-	-	-	2,350	-	-	28,600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Riverside	38,050	-	-	-	15,280	80	-	-	-	-	16,910	760	-	-	3,270	-	280	930	-	-	-	-	540		
Sacramento	104,440	-	64,960	910	12,180	1,380	2,740	10,100	5,640	-	-	-	-	-	-	-	-	2,600	-	-	3,930	-	-		
San Benito	2,830	-	-	-	820	560	-	-	-	-	-	-	-	-	-	-	-	1,210	-	-	240	-	-		
San Bernardino	5,700	-	-	-	-	1,840	-	-	-	-	-	20	-	-	-	-	-	2,290	-	-	-	1,550	-		
San Diego	3,100	-	-	-	-	2,010	410	-	-	-	-	-	-	-	630	-	-	-	-	-	-	50	-		
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
San Joaquin	262,460	-	172,590	-	24,020	-	-	15,100	5,870	-	-	5,000	4,130	-	3,170	-	7,110	-	-	360	-	25,110			
San Luis Obispo	16,100	-	-	-	-	12,300	-	-	-	-	-	-	-	360	-	-	3,440	-	-	-	-	-			
San Mateo	780	-	-	-	-	-	410	-	-	-	-	160	-	210	-	-	-	-	-	-	-	-	-		
Santa Barbara	8,750	-	-	-	-	-	-	-	-	-	3,990	-	1,040	-	-	860	-	-	-	1,330	-	1,530			
Santa Clara	1,160	-	-	-	-	-	-	-	-	-	660	-	-	-	-	210	-	-	290	-	-	-			
Santa Cruz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Shasta	13,800	-	-	-	-	-	13,800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	4,620	-	-	-	-	-	-	-	2,270	-		
Siskiyou	45,570	-	-	-	25,930	10,470	2,280	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Solano	67,250	-	11,460	-	35,120	640	-	-	4,210	-	-	4,140	-	-	-	-	1,910	-	-	9,770	-	-			
Sonoma	2,770	-	-	-	-	-	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,090	-		
Stanislaus	91,600	-	-	-	6,210	260	-	5,300	-	-	13,190	2,670	-	-	650	-	5,310	-	-	390	-	57,620			
Sutter	354,170	-	6,650	810	16,330	-	-	308,000	5,110	590	-	5,730	3,020	-	-	-	1,460	-	-	6,470	-	-			
Tehama	8,600	-	5,050	-	2,710	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	320	520			
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Tulare	311,960	-	79,220	14,790	85,620	1,250	-	-	-	-	53,720	3,510	-	-	-	-	-	-	-	-	150	-	73,700		
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,340	-	-	-	-	-	-	-		
Ventura	4,050	-	-	-	-	-	-	98,000	7,440	-	-	-	-	-	-	-	1,710	-	-	-	-	-	-		
Yolo	217,040	-	9,910	-	34,270	-	-	-	106,500	-	-	-	-	-	-	-	26,160	-	-	41,260	-	-			
Yuba	109,620	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,120	-	-	-	-	-	-	-		
Other-not located	172,450	-	18,340	2,540	54,220	1,750	11,200	18,000	1,657,000	37,000	1,000	778,000	68,000	17,000	3,000	56,000	15,000	89,000	128,000	27,000	36,000	-	6,110	640	24,440
STATE TOTALS	4,750,000	-	459,000	19,000	750,000	78,000	18,000	1,657,000	37,000	1,000	778,000	68,000	17,000	3,000	56,000	15,000	89,000	128,000	27,000	36,000	-	137,500	3,000	372,600	

**Table 14: Technical Field and Seed Crop Biomass (BDT/yr), 2007**

County Name	Total Field and Seed	Corn Silage	Corn	Sorghum	Wheat	Barley	Oats	Rice	Safflower	Sunflower	Cotton	Beans	Lima Beans	Peas	Potatoes	Sweet potatoes	Sugar Beets	Unspecified Field & Seed	Alfalfa Seed	Grass Seed	All Hay (alfalfa, grain, tame, wild green)	combined Seed	combined Rye (new)	Silage (Other)
Alameda	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	-	-	-	-	-	
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Amador	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	-	-	-	-	-	
Butte	168,490	-	-	-	2,210	-	-	165,800	60	-	-	420	-	-	-	-	-	-	-	-	-	-	-	
Calaveras	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	-	-	-	-	-	
Colusa	244,000	-	830	-	12,110	-	-	224,450	1,410	-	1,760	2,900	-	-	-	-	-	-	-	-	-	540	-	
Contra Costa	14,750	-	11,500	-	2,060	-	-	-	270	-	-	140	-	-	-	-	-	780	-	-	-	-	-	
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
El Dorado	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Fresno	184,000	-	10,310	-	33,090	10,510	-	5,400	-	-	118,180	1,840	-	-	-	-	1,150	-	3,280	-	-	240	-	
Glenn	151,440	-	12,650	-	5,220	1,190	-	128,550	90	-	1,980	1,500	-	-	-	-	-	-	-	-	-	260	-	
Humboldt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Imperial	62,900	-	-	-	23,600	-	-	-	-	-	10,590	-	-	-	90	-	2,420	3,740	7,240	14,150	-	1,070	-	
Inyo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Kern	150,260	-	-	-	73,530	2,350	-	-	440	-	70,100	1,690	-	-	1,650	-	400	-	-	-	-	100	-	
Kings	177,870	-	-	-	46,190	-	-	-	-	-	106,760	1,150	-	-	-	-	170	22,660	-	-	-	940	-	
Lake	950	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	950	-	-	-	-	-	
Lassen	1,240	-	-	-	1,000	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	110	-	10	
Los Angeles	720	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Madera	12,680	-	1,620	-	2,450	-	-	-	-	-	6,580	220	-	-	-	-	-	-	-	-	-	-	-	
Marin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mariposa	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mendocino	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Merced	62,420	-	8,550	-	7,530	1,700	-	3,850	-	-	36,490	680	1,590	-	-	720	260	960	-	-	-	90	-	
Modoc	8,410	-	-	-	7,360	580	190	-	-	-	-	-	-	-	280	-	-	-	-	-	-	-	-	
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Monterey	10,990	-	-	-	1,000	6,240	-	-	-	-	-	-	-	1,900	-	660	-	-	1,100	-	-	90	-	
Napa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Orange	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Placer	15,480	-	-	-	1,180	-	-	14,300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Riverside	17,160	-	-	-	7,640	40	-	-	-	-	8,460	380	-	-	160	-	10	470	-	-	-	-	-	
Sacramento	50,460	-	32,480	460	6,090	690	1,370	5,050	2,820	-	-	-	-	-	-	-	-	1,300	-	-	200	-		
San Benito	1,310	-	-	-	410	280	-	-	-	-	-	-	-	-	-	-	-	610	-	-	10	-		
San Bernardino	2,080	-	-	-	-	920	-	-	-	-	-	10	-	-	-	-	-	1,150	-	-	-	-		
San Diego	1,250	-	-	-	-	1,010	210	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-	-	
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
San Joaquin	117,110	-	86,300	-	12,010	-	-	7,550	2,940	-	-	2,500	2,070	-	160	-	-	3,560	-	-	20	-		
San Luis Obispo	8,050	-	-	-	-	6,150	-	-	-	-	-	-	-	180	-	-	1,720	-	-	-	-	-		
San Mateo	400	-	-	-	-	-	210	-	-	-	-	80	-	110	-	-	-	-	-	-	-	-	-	
Santa Barbara	3,020	-	-	-	-	-	-	-	-	-	-	2,000	-	520	-	-	430	-	-	-	70	-		
Santa Clara	450	-	-	-	-	-	-	-	-	-	-	330	-	-	-	-	110	-	-	-	10	-		
Santa Cruz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Shasta	6,900	-	-	-	-	-	-	6,900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	230	-	-	-	-	-	110	-	
Siskiyou	19,690	-	-	-	12,970	5,240	1,140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Solano	29,240	-	5,730	-	17,560	320	-	-	2,110	-	-	2,070	-	-	-	-	960	-	-	-	490	-		
Sonoma	340	-	-	-	-	-	340	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Stanislaus	16,540	-	-	-	3,110	130	-	-	2,650	-	-	6,600	1,340	-	30	-	2,660	-	-	20	-			
Sutter	174,200	-	3,330	410	8,170	-	-	154,000	2,560	300	-	2,870	1,510	-	-	-	730	-	-	320	-			
Tehama	3,910	-	2,530	-	1,360	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-		
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tulare	119,080	-	39,610	7,400	42,810	630	-	-	-	-	26,860	1,760	-	-	-	-	-	-	-	-	10	-		
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ventura	2,030	-	-	-	-	-	-	-	-	-	-	-	-	1,170	-	-	860	-	-	-	-	-		
Yolo	89,960	-	4,960	-	17,140	-	-	49,000	3,720	-	-	-	-	-	-	-	13,080	-	-	2,060	-			
Yuba	54,810	-	-	-	-	-	-	-	53,250	-	-	-	-	-	-	-	1,560	-	-	-	-			
Other- not located	68,760	-	9,170	1,270	27,110	880	5,600	7,750	2,260	30	1,230	3,060	890	120	180	10	60	1,610	3,090	4,100	-	310	30	
STATE TOTALS	2,054,000	-	229,500	9,500	374,900	38,900	9,100	828,500	18,700	300	389,000	34,000	8,600	1,600	2,800	800	4,500	64,000	13,700	18,200	-	6,900	200	

**Table 15: Gross Field and Seed Crop Biomass (BDT/yr), 2010**

County Name	Total Field and Seed	Corn Silage	Corn Sorghum	Wheat	Barley	Oats	Rice	Safflower	Sunflower	Cotton	Beans	Lima Beans	Peas	Potatoes	Sweet potatoes	Sugar Beets	Unspecified Field & Seed	All Hay (alfalfa, grain, tame, wild green grass)	Alfalfa Seed	Grass Seed	combined Seed	combined Rye	Silage (Other)	
Alameda	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	270	-	-	-	-	-		
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Amador	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	-	-	-	-	-		
Butte	356,600	-	-	4,480	-	-	351,230	110	-	-	800	-	-	-	-	-	-	-	-	-	-	-		
Calaveras	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	-	-	-	-	-		
Colusa	523,900	-	1,600	-	24,630	-	475,480	2,810	-	3,020	5,500	-	-	-	-	-	-	-	-	-	10,820	-		
Contra Costa	28,700	-	22,150	-	4,190	-	-	530	-	-	260	-	-	-	-	-	1,560	-	-	-	-	-		
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
El Dorado	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Fresno	351,200	-	19,850	-	67,300	17,280	-	11,440	-	203,250	3,490	-	-	-	16,920	-	6,910	-	-	4,720	-	-		
Glenn	321,000	-	24,370	-	10,620	1,950	-	272,320	180	-	3,410	2,840	-	-	-	-	-	-	-	-	5,280	-		
Humboldt	900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	900		
Imperial	177,700	-	-	47,990	-	-	-	-	-	18,210	-	-	-	1,810	-	35,670	7,480	15,250	29,790	-	21,470	-		
Inyo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Kern	392,300	-	-	149,550	3,860	-	-	880	-	120,560	3,210	-	33,360	-	5,860	-	-	-	-	1,940	-	73,100		
Kings	382,700	-	-	93,930	-	-	-	-	-	183,610	2,190	-	-	-	2,520	45,320	-	-	-	18,840	-	36,310		
Lake	1,900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,890	-	-	-	-	-		
Lassen	2,700	-	-	2,030	180	-	-	-	-	-	-	-	-	-	-	-	-	-	230	-	140	130		
Los Angeles	1,400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,440	-	-	-	-	-		
Madera	41,500	-	3,110	-	4,980	-	-	-	-	-	11,320	410	-	-	-	-	3,610	-	-	-	-	18,060		
Marin	1,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,470		
Mariposa	600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	600	-	-	-	-	-		
Mendocino	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Merced	188,400	-	16,460	-	15,310	2,790	-	8,160	-	62,760	1,280	3,010	-	-	15,440	3,770	1,920	-	-	-	1,890	-	55,650	
Modoc	22,000	-	-	-	14,960	950	360	-	-	-	-	-	-	5,720	-	-	-	-	-	-	-	-		
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Monterey	21,100	-	-	2,020	10,250	-	-	-	-	-	3,600	1,250	-	-	-	-	2,190	-	-	-	1,740	-	-	
Napa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Orange	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Placer	32,700	-	-	2,390	-	-	30,290	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Riverside	35,900	-	-	15,540	70	-	-	-	-	14,540	720	-	3,310	-	210	930	-	-	-	-	-	540		
Sacramento	102,500	-	62,570	940	12,390	1,130	2,620	10,700	5,640	-	-	-	-	-	-	2,600	-	-	3,930	-	-	-		
San Benito	2,700	-	-	-	830	460	-	-	-	-	-	-	-	-	-	1,210	-	-	240	-	-	-		
San Bernardino	5,400	-	-	-	-	1,510	-	-	-	-	-	20	-	-	-	-	2,290	-	-	-	1,550	-	-	
San Diego	2,700	-	-	-	-	1,650	390	-	-	-	-	-	640	-	-	-	-	-	-	-	-	50	-	
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
San Joaquin	257,000	-	166,230	-	24,430	-	-	15,990	5,870	-	4,750	3,930	-	3,210	-	7,110	-	-	360	-	25,110	-		
San Luis Obispo	13,900	-	-	-	-	10,110	-	-	-	-	-	-	340	-	-	3,440	-	-	-	-	-	-		
San Mateo	700	-	-	-	-	-	390	-	-	-	-	150	200	-	-	-	-	-	-	-	-	-	-	
Santa Barbara	8,500	-	-	-	-	-	-	-	-	-	3,790	990	-	-	860	-	-	1,330	-	1,530	-	-		
Santa Clara	1,100	-	-	-	-	-	-	-	-	-	630	-	-	-	210	-	-	290	-	-	-	-		
Santa Cruz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Shasta	14,600	-	-	-	-	-	14,620	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Siskiyou	44,100	-	-	26,370	8,600	2,180	-	-	-	-	-	-	4,670	-	-	-	-	-	-	-	2,270	-	-	
Solano	67,100	-	11,040	-	35,710	530	-	-	4,210	-	3,930	-	-	-	1,910	-	-	9,770	-	-	-	-		
Sonoma	2,700	-	-	-	-	650	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,090		
Stanislaus	91,200	-	-	6,320	210	-	5,610	-	-	-	12,540	2,540	-	700	5,310	-	-	390	-	-	57,620	-	-	
Sutter	372,000	-	6,400	830	16,610	-	-	326,240	5,110	590	-	5,450	2,870	-	-	1,460	-	-	6,470	-	-	-	-	
Tehama	8,500	-	4,860	-	2,760	-	-	-	-	-	-	-	-	-	-	-	-	-	320	-	520	-	-	
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Tulare	303,000	-	76,300	15,240	87,070	1,030	-	-	-	46,200	3,340	-	-	-	-	-	-	-	150	-	73,700	-	-	
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Ventura	3,900	-	-	-	-	-	-	-	-	-	-	2,220	-	-	-	1,710	-	-	-	-	-	-	-	
Yolo	223,100	-	9,540	-	34,850	-	-	103,800	7,440	-	-	-	-	-	-	26,160	-	-	41,260	-	-	-	-	
Yuba	115,900	-	-	-	-	-	-	112,810	-	-	-	-	-	-	-	3,120	-	-	-	-	-	-	-	
Other- not located	172,700	-	17,660	2,620	55,140	1,440	10,730	16,420	4,520	60	2,120	5,810	1,680	220	3,590	150	950	3,210	6,500	8,640	-	6,110	640	24,440
STATE TOTALS	4,698,000	-	442,140	19,630	762,400	64,000	17,320	1,755,110	37,300	650	669,000	64,710	16,250	3,000	56,310	16,290	65,900	127,990	28,890	38,430	-	137,460	3,040	372,640

**Table 16: Technical Field and Seed Crop Biomass (BDT/yr), 2010**

County Name	Total Field and Seed	Corn Silage	Corn	Sorghum	Wheat	Barley	Oats	Rice	Safflower	Sunflower	Cotton	Beans	Lima Beans	Peas	Potatoes	Sweet potatoes	Sugar Beets	Unspecified Field & Seed	Alfalfa Seed	Grass Seed	All Hay (alfalfa, grain, tame, wild green)	combined Seed	combined Rye	Silage (Other)
Alameda	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	-	-	-	-	-	
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Amador	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	-	-	-	-	-	
Butte	178,300	-	-	-	2,200	-	-	175,600	60	-	-	400	-	-	-	-	-	-	-	-	-	-	-	
Calaveras	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	-	-	-	-	-	
Colusa	257,000	-	800	-	12,300	-	-	237,700	1,410	-	1,500	2,750	-	-	-	-	-	-	-	-	-	540	-	
Contra Costa	14,400	-	11,100	-	2,100	-	-	-	270	-	-	130	-	-	-	-	-	780	-	-	-	-	-	
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
El Dorado	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Fresno	165,800	-	9,900	-	33,700	8,640	-	5,700	-	-	101,600	1,750	-	-	-	-	850	-	3,460	-	-	240	-	
Glenn	158,200	-	12,200	-	5,300	980	-	136,200	90	-	1,700	1,420	-	-	-	-	-	-	-	-	-	260	-	
Humboldt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Imperial	62,300	-	-	-	24,000	-	-	-	-	-	9,100	-	-	-	90	-	1,780	3,740	7,630	14,900	-	1,070	-	
Inyo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Kern	141,100	-	-	-	74,800	1,930	-	-	440	-	60,300	1,610	-	-	1,670	-	290	-	-	-	-	100	-	
Kings	163,600	-	-	-	47,000	-	-	-	-	-	91,800	1,100	-	-	-	-	130	22,660	-	-	-	940	-	
Lake	1,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Lassen	1,200	-	-	-	1,000	90	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-	10	10	
Los Angeles	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Madera	11,800	-	1,600	-	2,500	-	-	-	-	-	5,700	210	-	-	-	-	-	-	1,810	-	-	-	-	
Marin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mariposa	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	300	-	-	-	-	-	
Mendocino	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Merced	57,000	-	8,200	-	7,700	1,400	-	4,100	-	-	31,400	640	1,510	-	-	770	190	960	-	-	-	90	-	
Modoc	8,500	-	-	-	7,500	480	180	-	-	-	-	-	-	-	290	-	-	-	-	-	-	-	-	
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Monterey	9,800	-	-	-	1,000	5,130	-	-	-	-	-	-	-	1,800	-	630	-	-	1,100	-	-	90	-	
Napa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Orange	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Placer	16,300	-	-	-	1,200	-	-	15,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Riverside	16,200	-	-	-	7,800	40	-	-	-	-	7,300	360	-	-	170	-	10	470	-	-	-	-	-	
Sacramento	49,600	-	31,300	470	6,200	570	1,310	5,400	2,820	-	-	-	-	-	-	-	-	1,300	-	-	200	-	-	
San Benito	1,300	-	-	-	400	230	-	-	-	-	-	-	-	-	-	-	-	610	-	-	10	-	-	
San Bernardino	1,900	-	-	-	-	760	-	-	-	-	-	10	-	-	-	-	-	1,150	-	-	-	-	-	
San Diego	1,100	-	-	-	-	830	200	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-	-	
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
San Joaquin	114,300	-	83,100	-	12,200	-	-	8,000	2,940	-	-	2,380	1,970	-	160	-	-	3,560	-	-	20	-	-	
San Luis Obispo	7,000	-	-	-	-	5,060	-	-	-	-	-	-	-	170	-	-	1,720	-	-	-	-	-	-	
San Mateo	400	-	-	-	-	-	200	-	-	-	-	80	-	100	-	-	-	-	-	-	-	-	-	
Santa Barbara	2,900	-	-	-	-	-	-	-	-	-	-	1,900	-	500	-	-	430	-	-	70	-	-		
Santa Clara	400	-	-	-	-	-	-	-	-	-	-	320	-	-	-	-	110	-	-	10	-	-		
Santa Cruz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Shasta	7,300	-	-	-	-	-	-	7,300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Siskiyou	18,900	-	-	-	13,200	4,300	1,090	-	-	-	-	-	-	-	230	-	-	-	-	-	-	110	-	
Solano	29,200	-	5,500	-	17,900	270	-	-	2,110	-	-	1,970	-	-	-	-	960	-	-	490	-	-	-	
Sonoma	300	-	-	-	-	-	330	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Stanislaus	16,400	-	-	-	3,200	110	-	2,800	-	-	-	6,270	1,270	-	-	40	-	2,660	-	-	20	-	-	
Sutter	183,100	-	3,200	420	8,300	-	-	163,100	2,560	300	-	-	2,730	1,440	-	-	-	730	-	-	320	-	-	
Tehama	3,800	-	2,400	-	1,400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-	
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tulare	114,600	-	38,200	7,620	43,500	520	-	-	-	-	23,100	1,670	-	-	-	-	-	-	-	-	10	-	-	
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ventura	2,000	-	-	-	-	-	-	-	-	-	-	-	1,110	-	-	-	-	860	-	-	-	-	-	
Yolo	93,000	-	4,800	-	17,400	-	-	51,900	3,720	-	-	-	-	-	-	-	13,080	-	-	2,060	-	-		
Yuba	58,000	-	-	-	-	-	-	-	56,400	-	-	-	-	-	-	-	1,560	-	-	-	-	-		
Other- not located	69,000	-	8,800	1,310	27,600	720	5,370	8,200	2,260	30	1,100	2,910	840	110	180	10	50	1,610	3,250	4,320	-	310	30	-
STATE TOTALS	2,038,000	-	221,100	9,820	381,400	32,060	8,680	877,500	18,680	330	334,600	32,410	8,140	1,510	2,820	820	3,300	1,610	64,070	14,460	19,220	-	6,880	150

**Table 17: Gross Field and Seed Crop Biomass (BDT/yr), 2017**

County Name	Total Field and Seed	Corn Silage	Corn	Sorghum	Wheat	Barley	Oats	Rice	Safflower	Sunflower	Cotton	Beans	Lima Beans	Peas	Potatoes	Sweet potatoes	Sugar Beets	Unspecified Field & Seed	Alfalfa Seed	Grass Seed	All Hay (alfalfa, grain, tame, wild green)	combined Seed	combined Rye	Silage (Other)
Alameda	270	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	270	-	-	-	-	-	
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Amador	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	-	-	-	-	-	
Butte	407,170	-	-	-	4,660	-	-	401,690	110	-	-	710	-	-	-	-	-	-	-	-	-	-	-	
Calaveras	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	-	-	-	-	-	
Colusa	591,490	-	1,460	-	25,610	-	-	543,780	2,810	-	2,120	4,890	-	-	-	-	-	-	-	-	-	10,820	-	
Contra Costa	26,970	-	20,290	-	4,360	-	-	-	530	-	-	230	-	-	-	-	-	1,560	-	-	-	-	-	
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
El Dorado	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Fresno	279,070	-	18,190	-	69,990	10,930	-	13,080	-	-	142,930	3,100	-	-	-	8,330	-	7,800	-	-	4,720	-	-	
Glenn	356,400	-	22,320	-	11,040	1,230	-	311,440	180	-	2,390	2,520	-	-	-	-	-	-	-	-	5,280	-	-	
Humboldt	900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	900	
Imperial	161,920	-	-	-	49,900	-	-	-	-	-	12,810	-	-	1,860	-	17,570	7,480	17,210	33,620	-	-	21,470	-	
Inyo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Kern	358,650	-	-	-	155,520	2,440	-	-	880	-	84,780	2,850	-	-	34,250	-	2,890	-	-	-	-	1,940	-	
Kings	330,450	-	-	-	97,680	-	-	-	-	-	129,120	1,940	-	-	-	1,240	45,320	-	-	-	-	18,840	-	
Lake	1,890	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,890	-	-	-	-	-	-	
Lassen	2,760	-	-	-	2,120	110	-	-	-	-	-	-	-	-	-	-	-	260	-	-	140	130	-	
Los Angeles	1,440	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,440	-	-	-	-	-	-	
Madera	38,020	-	2,850	-	5,180	-	-	-	-	-	7,960	360	-	-	-	-	-	3,610	-	-	-	-	18,060	-
Marin	1,470	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,470	
Mariposa	600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	600	-	-	-	-	-	-	
Mendocino	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Merced	169,450	-	15,080	-	15,930	1,760	-	9,330	-	-	44,130	1,140	2,680	-	-	18,080	1,860	1,920	-	-	1,890	-	55,650	
Modoc	22,370	-	-	-	15,560	600	330	-	-	-	-	-	-	-	5,880	-	-	-	-	-	-	-	-	
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Monterey	16,820	-	-	-	2,100	6,480	-	-	-	-	-	-	-	3,200	1,110	-	-	2,190	-	-	1,740	-	-	
Napa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Orange	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Placer	37,140	-	-	-	2,490	-	-	34,650	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Riverside	32,030	-	-	-	16,160	40	-	-	-	-	10,230	640	-	-	3,390	-	100	930	-	-	-	-	540	
Sacramento	98,700	-	57,320	1,010	12,880	720	2,370	12,230	5,640	-	-	-	-	-	-	-	-	2,600	-	-	3,930	-	-	
San Benito	2,610	-	-	-	-	870	290	-	-	-	-	-	-	-	-	-	-	1,210	-	-	240	-	-	
San Bernardino	4,820	-	-	-	-	960	-	-	-	-	-	-	-	20	-	-	-	2,290	-	-	-	1,550	-	-
San Diego	2,110	-	-	-	-	1,050	360	-	-	-	-	-	-	-	650	-	-	-	-	-	-	50	-	
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
San Joaquin	245,430	-	152,290	-	25,400	-	-	18,290	5,870	-	-	4,220	3,490	-	3,290	-	7,110	-	-	360	-	25,110	-	
San Luis Obispo	10,140	-	-	-	-	6,400	-	-	-	-	-	-	-	300	-	-	3,440	-	-	-	-	-	-	
San Mateo	680	-	-	-	-	-	360	-	-	-	-	-	-	140	180	-	-	-	-	-	-	-	-	
Santa Barbara	7,970	-	-	-	-	-	-	-	-	-	-	3,370	-	880	-	-	860	-	-	1,330	-	1,530	-	
Santa Clara	1,060	-	-	-	-	-	-	-	-	-	-	560	-	-	-	210	-	-	290	-	-	-		
Santa Cruz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Shasta	16,720	-	-	-	-	-	-	16,720	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Siskiyou	41,910	-	-	-	27,420	5,440	1,980	-	-	-	-	-	-	4,800	-	-	-	-	-	-	2,270	-	-	
Solano	66,960	-	10,110	-	37,140	330	-	-	4,210	-	-	3,490	-	-	-	-	1,910	-	-	9,770	-	-	-	
Sonoma	2,680	-	-	-	-	-	590	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,090	-	
Stanislaus	90,640	-	-	-	6,570	140	-	6,420	-	-	-	11,130	2,250	-	810	-	5,310	-	-	390	-	57,620	-	
Sutter	418,150	-	5,870	890	17,270	-	-	373,100	5,110	590	-	4,840	2,550	-	-	-	1,460	-	-	6,470	-	-	-	
Tehama	8,170	-	4,460	-	2,870	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	320	-	520	
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tulare	286,740	-	69,900	16,340	90,550	650	-	-	-	-	32,490	2,960	-	-	-	-	-	-	-	-	150	-	73,700	
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-	1,980	-	-	-	-	-	-	-	-	-	
Ventura	3,690	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,710	-	-	-	-	-	-	
Yolo	238,550	-	8,740	-	36,240	-	-	118,710	7,440	-	-	-	-	-	-	-	26,160	-	-	-	41,260	-	-	
Yuba	132,130	-	-	-	-	-	-	-	129,010	-	-	-	-	-	-	-	3,120	-	-	-	-	-	-	
Other- not located	174,450	-	16,180	2,810	57,340	910	9,710	18,780	4,520	60	1,490	5,160	1,490	190	3,690	180	470	3,210	7,330	9,740	-	6,110	640	24,440
STATE TOTALS	4,692,000	-	405,060	21,050	792,850	40,480	15,700	2,007,230	37,300	650	470,450	57,470	14,440	2,660	57,810	19,070	32,460	127,990	32,600	43,360	-	137,460	3,040	372,640

**Table 18: Technical Field and Seed Crop Biomass (BDT/yr), 2017**

County Name	Total Field and Seed	Corn Silage	Corn	Sorghum	Wheat	Barley	Oats	Rice	Safflower	Sunflower	Cotton	Beans	Lima Beans	Peas	Potatoes	Sweet potatoes	Sugar Beets	Unspecified Field & Seed	Alfalfa Seed	Grass Seed	All Hay (alfalfa, grain, tame, wild green)	combined Seed	combined Rye	Silage (Other)
Alameda	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	140	-	-	-	-	-	
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Amador	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	-	-	-	-	-	
Butte	203,600	-	-	-	2,330	-	-	200,800	60	-	-	360	-	-	-	-	-	-	-	-	-	-	-	
Calaveras	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	-	-	-	-	-	
Colusa	290,900	-	730	-	12,810	-	-	271,900	1,410	-	1,060	2,450	-	-	-	-	-	-	-	-	-	540	-	
Contra Costa	13,500	-	10,150	-	2,180	-	-	-	270	-	-	120	-	-	-	-	-	780	-	-	-	-	-	
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
El Dorado	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Fresno	133,700	-	9,100	-	35,000	5,470	-	6,500	-	-	71,470	1,550	-	-	-	-	-	420	-	3,900	-	-	240	
Glenn	175,800	-	11,160	-	5,520	620	-	155,700	90	-	1,200	1,260	-	-	-	-	-	-	-	-	-	-	260	
Humboldt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Imperial	62,600	-	-	-	24,950	-	-	-	-	-	6,410	-	-	90	-	880	3,740	8,610	16,810	-	-	1,070	-	
Inyo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Kern	125,200	-	-	-	77,760	1,220	-	-	440	-	42,390	1,430	-	-	1,710	-	140	-	-	-	-	-	100	
Kings	138,000	-	-	-	48,840	-	-	-	-	-	64,560	970	-	-	-	-	60	22,660	-	-	-	-	-	940
Lake	1,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	950	-	-	-	-	-	
Lassen	1,300	-	-	-	1,060	60	-	-	-	-	-	-	-	-	-	-	-	-	130	-	-	10	10	
Los Angeles	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	720	-	-	-	-	-	
Madera	10,000	-	1,430	-	2,590	-	-	-	-	-	3,980	180	-	-	-	-	-	-	1,810	-	-	-	-	
Marin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mariposa	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	300	-	-	-	-	-	
Mendocino	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Merced	47,100	-	7,540	-	7,970	880	-	4,700	-	-	22,070	570	1,340	-	-	-	900	90	960	-	-	-	90	
Modoc	8,500	-	-	-	7,780	300	170	-	-	-	-	-	-	-	-	290	-	-	-	-	-	-		
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Monterey	7,600	-	-	-	1,050	3,240	-	-	-	-	-	1,600	-	560	-	-	-	1,100	-	-	-	-	90	
Napa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Orange	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Placer	18,600	-	-	-	1,250	-	-	17,300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Riverside	14,200	-	-	-	8,080	20	-	-	-	-	5,120	320	-	-	170	-	10	470	-	-	-	-	-	
Sacramento	47,600	-	28,660	510	6,440	360	1,190	6,100	2,820	-	-	-	-	-	-	-	-	1,300	-	-	-	200		
San Benito	1,200	-	-	-	440	150	-	-	-	-	-	-	-	-	-	-	-	610	-	-	-	10		
San Bernardino	1,600	-	-	-	-	480	-	-	-	-	-	-	10	-	-	-	-	1,150	-	-	-	-		
San Diego	700	-	-	-	-	530	180	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-		
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
San Joaquin	108,500	-	76,150	-	12,700	-	-	9,100	2,940	-	-	2,110	1,750	-	160	-	-	3,560	-	-	-	20		
San Luis Obispo	5,100	-	-	-	-	3,200	-	-	-	-	-	-	-	150	-	-	-	1,720	-	-	-	-		
San Mateo	300	-	-	-	-	-	180	-	-	-	-	70	-	90	-	-	-	-	-	-	-	-	-	
Santa Barbara	2,600	-	-	-	-	-	-	-	-	-	-	1,690	-	440	-	-	430	-	-	-	70	-		
Santa Clara	400	-	-	-	-	-	-	-	-	-	-	280	-	-	-	-	110	-	-	-	10	-		
Santa Cruz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Shasta	8,400	-	-	-	-	-	8,400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Siskiyou	17,800	-	-	-	13,710	2,720	990	-	-	-	-	-	-	240	-	-	-	-	-	-	-	110		
Solano	29,100	-	5,060	-	18,570	170	-	-	2,110	-	-	1,750	-	-	-	960	-	-	-	490	-	-	-	
Sonoma	300	-	-	-	-	-	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Stanislaus	16,000	-	-	-	3,290	70	-	3,200	-	-	-	5,570	1,130	-	40	-	2,660	-	-	-	20	-	-	
Sutter	206,200	-	2,940	450	8,640	-	-	186,600	2,560	300	-	2,420	1,280	-	-	-	730	-	-	-	320	-	-	
Tehama	3,700	-	2,230	-	1,440	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-	
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tulare	106,500	-	34,950	8,170	45,280	330	-	-	-	-	16,250	1,480	-	-	-	-	-	-	-	-	10	-	-	
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ventura	1,900	-	-	-	-	-	-	-	-	-	-	-	990	-	-	-	860	-	-	-	-	-	-	
Yolo	100,800	-	4,370	-	18,120	-	-	59,400	3,720	-	-	-	-	-	-	-	13,080	-	-	-	2,060	-	-	
Yuba	66,100	-	-	-	-	-	-	64,500	-	-	-	-	-	-	-	-	1,560	-	-	-	-	-	-	
Other- not located	70,100	-	8,090	1,410	28,670	460	4,860	9,400	2,260	30	750	2,580	750	100	180	10	20	1,610	3,670	4,870	-	310	30	-
STATE TOTALS	2,047,000	-	202,560	10,540	396,470	20,280	7,870	1,003,600	18,680	330	235,260	28,770	7,240	1,340	2,870	950	1,620	64,070	16,310	21,680	-	6,880	150	-

**Table 19: Gross Field and Seed Crop Biomass (BDT/yr), 2020**

County Name	Total Field and Seed	Corn Silage	Corn	Sorghum	Wheat	Barley	Oats	Rice	Safflower	Sunflower	Cotton	Beans	Lima Beans	Peas	Potatoes	Sweet potatoes	Sugar Beets	Unspecified Field & Seed	Alfalfa Seed	Grass Seed	All Hay (alfalfa, grain, tame, wild green)	combined Seed	combined Rye	Silage (Other)
Alameda	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	270	-	-	-	-	-	-	
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Amador	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	-	-	-	-	-	-	
Butte	431,000	-	-	-	4,740	-	-	425,470	110	-	-	670	-	-	-	-	-	-	-	-	-	-	-	
Calaveras	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	-	-	-	-	-	-	
Colusa	623,500	-	1,410	-	26,050	-	-	575,980	2,810	-	1,830	4,640	-	-	-	-	-	-	-	-	-	10,820	-	
Contra Costa	26,300	-	19,550	-	4,430	-	-	-	530	-	-	220	-	-	-	-	1,560	-	-	-	-	-	-	
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
El Dorado	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Fresno	256,500	-	17,520	-	71,170	8,980	-	13,860	-	-	122,910	2,940	-	-	-	6,150	-	8,210	-	-	4,720	-	-	
Glen	373,500	-	21,500	-	11,230	1,010	-	329,880	180	-	2,060	2,400	-	-	-	-	-	-	-	-	5,280	-	-	
Humboldt	900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	900	
Imperial	159,100	-	-	-	50,750	-	-	-	-	-	11,010	-	-	1,880	-	12,980	7,480	18,120	35,410	-	21,470	-	-	
Inyo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Kern	348,500	-	-	-	158,150	2,010	-	-	880	-	72,910	2,710	-	-	34,640	-	2,130	-	-	-	1,940	-	73,100	
Kings	313,600	-	-	-	99,340	-	-	-	-	-	111,040	1,850	-	-	-	920	45,320	-	-	-	18,840	-	36,310	
Lake	1,900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,890	-	-	-	-	-	-	-	
Lassen	2,800	-	-	-	2,150	90	-	-	-	-	-	-	-	-	-	-	-	280	-	-	140	130	-	
Los Angeles	1,400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,440	-	-	-	-	-	-	
Madera	36,900	-	2,740	-	5,270	-	-	-	-	-	6,840	340	-	-	-	-	3,610	-	-	-	-	-	18,060	
Marin	1,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,470	
Mariposa	600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	600	-	-	-	-	-	-	-	
Mendocino	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Merced	163,800	-	14,520	-	16,200	1,450	-	9,880	-	-	37,950	1,080	2,540	-	-	19,350	1,370	1,920	-	-	1,890	-	55,650	
Modoc	22,600	-	-	-	15,820	490	320	-	-	-	-	-	-	-	5,940	-	-	-	-	-	-	-	-	
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Monterey	15,500	-	-	-	2,140	5,330	-	-	-	-	-	-	-	-	3,040	-	1,060	-	-	2,190	-	1,740		
Napa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Orange	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Placer	39,200	-	-	-	2,530	-	-	36,700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Riverside	30,800	-	-	-	16,430	30	-	-	-	-	8,790	610	-	-	3,430	-	80	930	-	-	-	-	540	
Sacramento	97,300	-	55,210	1,040	13,100	590	2,270	12,960	5,640	-	-	-	-	-	-	-	2,600	-	-	3,930	-	-	-	
San Benito	2,600	-	-	-	-	880	240	-	-	-	-	-	-	-	-	-	1,210	-	-	240	-	-	-	
San Bernardino	4,700	-	-	-	-	790	-	-	-	-	-	20	-	-	-	-	2,290	-	-	-	-	-	1,550	
San Diego	1,900	-	-	-	-	860	340	-	-	-	-	-	-	-	660	-	-	-	-	-	-	50		
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
San Joaquin	241,000	-	146,670	-	25,830	-	-	19,370	5,870	-	-	4,010	3,310	-	-	3,330	-	7,110	-	-	360	-	25,110	
San Luis Obispo	9,000	-	-	-	-	5,260	-	-	-	-	-	-	-	-	290	-	-	3,440	-	-	-	-	-	
San Mateo	600	-	-	-	-	-	340	-	-	-	-	-	-	-	130	-	170	-	-	-	-	-	-	
Santa Barbara	7,800	-	-	-	-	-	-	-	-	-	-	3,200	830	-	-	-	860	-	-	1,330	-	1,530		
Santa Clara	1,000	-	-	-	-	-	-	-	-	-	-	530	-	-	-	-	210	-	-	290	-	-	-	
Santa Cruz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Shasta	17,700	-	-	-	-	-	-	17,710	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Siskiyou	41,400	-	-	-	27,890	4,470	1,890	-	-	-	-	-	-	-	4,850	-	-	-	-	-	-	2,270		
Solano	67,000	-	9,740	-	37,770	270	-	-	4,210	-	-	3,320	-	-	-	-	1,910	-	-	9,770	-	-	-	
Sonoma	2,700	-	-	-	-	-	560	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,090	
Stanislaus	90,500	-	-	-	6,680	110	-	6,800	-	-	-	10,580	2,140	-	-	870	5,310	-	-	390	-	57,620		
Sutter	440,000	-	5,650	920	17,560	-	-	395,190	5,110	590	-	4,600	2,420	-	-	-	1,460	-	-	6,470	-	-	-	
Tehama	8,000	-	4,290	-	2,910	-	-	-	-	-	-	-	-	-	-	-	-	-	-	320	-	520		
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tulare	281,400	-	67,320	16,830	92,080	530	-	-	-	-	27,940	2,820	-	-	-	-	-	-	-	150	-	73,700		
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ventura	3,600	-	-	-	-	-	-	-	-	-	-	-	1,880	-	-	-	1,710	-	-	-	-	-	-	
Yolo	245,900	-	8,420	-	36,850	-	-	125,740	7,440	-	-	-	-	-	-	-	26,160	-	-	41,260	-	-	-	
Yuba	139,800	-	-	-	-	-	-	-	136,650	-	-	-	-	-	-	-	3,120	-	-	-	-	-	-	
Other- not located	175,700	-	15,590	2,890	58,310	750	9,300	19,890	4,520	60	1,280	4,900	1,420	180	3,730	190	350	3,210	7,720	10,260	-	6,110	640	24,440
STATE TOTALS	4,730,000	-	390,130	21,680	806,260	33,260	15,020	2,126,080	37,300	650	404,560	54,610	13,710	2,530	58,460	20,410	23,980	127,990	34,330	45,670	-	137,460	3,040	372,640

**Table 20: Technical Field and Seed Crop Biomass (BDT/yr), 2020**

County Name	Total Field and Seed	Corn Silage	Corn	Sorghum	Wheat	Barley	Oats	Rice	Safflower	Sunflower	Cotton	Beans	Lima Beans	Peas	Potatoes	Sweet potatoes	Sugar Beets	Unspecified Field & Seed	Alfalfa Seed	Grass Seed	All Hay (alfalfa, grain, tame, wild green)	combined Seed	combined Rye	Silage (Other)			
Alameda	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-	-				
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Amador	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Butte	215,500	-	-	-	2,370	-	-	212,740	60	-	-	340	-	-	-	-	-	-	-	-	-	-	-				
Calaveras	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Colusa	306,900	-	710	-	13,030	-	-	287,990	1,410	-	920	2,320	-	-	-	-	-	-	-	-	-	540	-				
Contra Costa	12,500	-	9,780	-	2,220	-	-	-	270	-	-	110	-	-	-	-	-	80	-	-	-	-	-				
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
El Dorado	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Fresno	119,700	-	8,760	-	35,590	4,490	-	6,930	-	-	61,460	1,470	-	-	-	-	310	-	410	-	-	240	-				
Glenn	184,400	-	10,750	-	5,620	510	-	164,940	90	-	1,030	1,200	-	-	-	-	-	-	-	-	-	260	-				
Humboldt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Imperial	35,800	-	-	-	25,380	-	-	-	-	-	5,510	-	-	-	90	-	650	370	910	1,770	-	1,070	-				
Inyo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Kern	120,300	-	-	-	79,080	1,010	-	-	440	-	36,460	1,360	-	-	1,730	-	110	-	-	-	-	100	-				
Kings	109,400	-	-	-	49,670	-	-	-	-	-	55,520	930	-	-	-	-	50	2,270	-	-	-	940	-				
Lake	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	-	-				
Lassen	1,200	-	-	-	1,080	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	10				
Los Angeles	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	-	-				
Madera	7,800	-	1,370	-	-	2,640	-	-	-	-	-	3,420	170	-	-	-	-	-	-	-	-	180	-	-			
Marin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Mariposa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-				
Mendocino	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Merced	43,100	-	7,260	-	8,100	730	-	4,940	-	-	18,980	540	1,270	-	-	970	70	100	-	-	-	90	-	-			
Modoc	8,600	-	-	-	7,910	250	160	-	-	-	-	-	-	-	300	-	-	-	-	-	-	-	-	-			
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Monterey	6,000	-	-	-	1,070	2,670	-	-	-	-	-	1,520	-	530	-	-	-	-	110	-	-	-	90	-	-		
Napa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Orange	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Placer	19,600	-	-	-	1,270	-	-	18,350	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Riverside	13,200	-	-	-	8,220	20	-	-	-	-	4,400	310	-	-	170	-	-	50	-	-	-	-	-	-	-		
Sacramento	45,800	-	27,610	520	6,550	300	1,140	6,480	2,820	-	-	-	-	-	-	-	-	130	-	-	200	-	-	-			
San Benito	600	-	-	-	-	440	120	-	-	-	-	-	-	-	-	-	60	-	-	-	10	-	-	-			
San Bernardino	500	-	-	-	-	400	-	-	-	-	-	10	-	-	-	-	110	-	-	-	-	-	-	-			
San Diego	600	-	-	-	-	430	170	-	-	-	-	-	-	-	30	-	-	-	-	-	-	-	-	-			
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
San Joaquin	103,100	-	73,340	-	12,920	-	-	9,690	2,940	-	-	2,010	1,660	-	170	-	-	360	-	-	-	20	-	-	-		
San Luis Obispo	3,000	-	-	-	-	2,630	-	-	-	-	-	-	-	-	150	-	170	-	-	-	-	-	-	-	-		
San Mateo	300	-	-	-	-	-	170	-	-	-	-	70	-	90	-	-	-	-	-	-	-	-	-	-	-		
Santa Barbara	2,100	-	-	-	-	-	-	-	-	-	-	1,600	-	420	-	-	40	-	-	-	70	-	-	-	-		
Santa Clara	300	-	-	-	-	-	-	-	-	-	-	270	-	-	-	-	10	-	-	-	10	-	-	-	-		
Santa Cruz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Shasta	8,900	-	-	-	-	-	-	8,860	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Siskiyou	17,500	-	-	-	13,950	2,240	950	-	-	-	-	-	-	-	240	-	-	-	-	-	-	-	-	110	-	-	
Solano	28,300	-	4,870	-	18,890	140	-	-	2,110	-	-	1,660	-	-	-	-	100	-	-	-	490	-	-	-	-		
Sonoma	300	-	-	-	-	-	280	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Stanislaus	13,500	-	-	-	3,340	60	-	3,400	-	-	-	5,290	1,070	-	-	40	-	270	-	-	-	20	-	-	-	-	
Sutter	216,400	-	2,830	460	8,780	-	-	197,600	2,560	300	-	2,300	1,210	-	-	-	-	70	-	-	-	320	-	-	-	-	
Tehama	3,600	-	2,150	-	1,460	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-	-	-	
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tulare	103,800	-	33,660	8,420	46,040	270	-	-	-	-	13,970	1,410	-	-	-	-	-	-	-	-	-	10	-	-	-	-	
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ventura	1,000	-	-	-	-	-	-	-	-	-	-	-	-	-	940	-	-	-	-	-	-	90	-	-	-	-	-
Yolo	92,600	-	4,210	-	18,430	-	-	62,870	3,720	-	-	-	-	-	-	-	-	1,310	-	-	-	2,060	-	-	-	-	
Yuba	68,500	-	-	-	-	-	-	-	68,330	-	-	-	-	-	-	-	-	160	-	-	-	-	-	-	-	-	
Other-not located	61,200	-	7,800	1,450	29,160	380	4,650	9,950	2,260	30	640	2,450	710	90	190	10	20	160	390	510	-	310	30	-	-	-	
STATE TOTALS	1,976,000	-	195,100	10,850	403,210	16,700	7,520	1,063,070	18,680	330	202,310	27,340	6,860	1,280	2,920	1,020	1,210	6,400	1,720	2,280	-	6,880	150	-	-	-	

### 2.1.3 Vegetable Crops

Vegetable crops are planted on about 1.4 million acres in California. Gross quantities (BDT/y) of residual biomass were estimated as for orchard and vineyard and field and seed crops. Yield factors for crops considered are listed in Table 21. Distribution within the state is shown in Figure 3.

**Table 21: Residue Yield Factors for Vegetable Crops**

Biomass Type	2005 (--)	2010 (--)	2017 (--)	2020 (--)
Artichokes	0.05	0.05	0.05	0.05
Asparagus	0.05	0.05	0.05	0.05
Green Lima Beans	0.05	0.05	0.05	0.05
Berries	0.05	0.05	0.05	0.05
Snap Beans	0.05	0.05	0.05	0.05
Broccoli	0.05	0.05	0.05	0.05
Cabbage	0.05	0.05	0.05	0.05
Cantaloupe Melons	0.05	0.05	0.05	0.05
Carrots	0.05	0.05	0.05	0.05
Cauliflower	0.05	0.05	0.05	0.05
Celery	0.05	0.05	0.05	0.05
Cucumbers	0.05	0.05	0.05	0.05
Garlic	0.05	0.05	0.05	0.05
Honeydew Melons	0.05	0.05	0.05	0.05
Lettuce and Romaine	0.05	0.05	0.05	0.05
Dry Onions	0.05	0.05	0.05	0.05
Green Onions	0.05	0.05	0.05	0.05
Hot Peppers	0.05	0.05	0.05	0.05
Sweet Peppers	0.05	0.05	0.05	0.05
Spices & Herbs	0.05	0.05	0.05	0.05
Spinach	0.05	0.05	0.05	0.05
Squash	0.05	0.05	0.05	0.05
Sweet Corn	0.5	0.5	0.5	0.5
Tomatoes	0.05	0.05	0.05	0.05
Unspecified vegetables	0.05	0.05	0.05	0.05

Resource quantities for 2007 to 2020 were again projected from base year data using escalation rates derived from production trends over the previous 10 years as listed in Table 21. This estimation method results in a slight growth in total biomass over the period.

Technical residue availability factors assumed were 5% for all crops other than sweet corn for which half the residue was considered available. In most cases vegetable crop residues are incorporated into the soil or used for animal feeding. Estimated gross and technical biomass quantities for each crop type by county are listed in Tables 22 - 29 for years 2007, 2010, 2017, and 2020.

**Figure 3: Estimated Vegetable Crop Biomass (gross BDT/y) in California, 2007**



**Table 22: Gross Vegetable Crop Biomass (BDT/yr), 2007**

County Name	Total Vegetable	Artichokes	Asparagus	Green Lima Beans	combined Berries	Broccoli	Cabbage	combined Melons	Carrots	Cauliflower	Celery	Cucumbers	combined Garlic	combined Lettuce	Dry Onions	Hot Peppers	Sweet Peppers	Spices & Herbs	Spinach	Squash	Sweet Corn	Tomatoes & Eggplant	combined unspecified vegetables
Alameda	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Amador	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Butte	240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240	
Calaveras	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Colusa	24,020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23,920	100	
Contra Costa	17,380	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	14,350	1,950	
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,030	
El Dorado	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Fresno	325,920	-	3,850	-	-	9,720	-	37,850	-	-	-	-	15,410	29,600	22,700	-	2,180	-	1,130	22,230	178,540	2,710	
Glenn	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Humboldt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Imperial	125,580	-	1,730	-	-	10,160	1,310	13,270	12,850	2,610	-	-	-	35,000	9,870	-	-	3,470	-	29,510	-	5,800	
Inyo	450	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	450	
Kern	13,540	-	-	-	-	-	-	-	4,110	-	-	-	2,720	960	4,100	-	1,650	-	-	-	-	-	
Kings	37,270	-	-	-	-	-	-	-	810	-	-	-	1,140	-	-	-	-	-	-	-	27,380	7,940	
Lake	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	
Lassen	1,700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,700	
Los Angeles	180	-	-	-	140	-	-	-	-	-	-	-	-	-	-	-	-	40	-	-	-	-	
Madera	8,010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7,410	600	
Marin	270	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	270	
Mariposa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mendocino	380	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	380	
Merced	58,420	-	-	-	140	-	-	-	8,360	-	-	-	-	-	-	-	-	-	-	-	35,490	14,430	
Modoc	8,110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6,830	
Mono	130	-	-	-	-	-	-	-	-	-	-	-	130	-	-	-	-	-	-	-	-	-	
Monterey	315,130	12,310	7,160	-	12,740	35,960	5,050	-	1,120	13,070	-	-	1,330	181,260	1,500	-	750	100	-	370	-	850	41,560
Napa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Orange	2,210	-	-	-	-	2,120	-	-	-	-	-	-	-	-	-	-	10	-	-	-	60	20	
Placer	50	-	-	-	-	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Riverside	42,610	1,150	-	-	470	2,910	270	6,080	1,530	830	260	-	-	4,650	220	-	3,850	560	530	280	9,430	710	8,880
Sacramento	12,920	-	2,220	-	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,240	-	6,640	2,690
San Benito	28,790	390	-	-	-	490	610	-	-	-	540	-	-	11,310	1,500	-	1,460	-	3,350	-	-	1,610	7,530
San Bernardino	4,770	-	-	-	170	-	2,130	-	-	-	-	270	-	-	220	-	-	60	-	130	360	140	1,290
San Diego	9,090	-	-	-	1,290	-	-	-	130	-	-	660	-	430	-	-	210	510	-	260	1,030	3,010	1,560
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
San Joaquin	126,450	-	30,140	-	650	-	2,590	-	-	2,690	-	-	1,840	-	850	-	-	4,090	8,930	67,250	7,420		
San Luis Obispo	34,820	-	130	-	1,400	9,720	1,100	-	-	2,200	980	-	-	8,250	-	-	670	-	330	300	-	9,870	
San Mateo	2,270	130	-	-	60	-	-	-	-	-	-	-	150	-	-	-	-	-	-	310	-	1,620	
Santa Barbara	76,840	-	-	-	8,070	24,300	920	-	-	7,410	3,140	-	-	17,120	-	-	350	-	940	1,110	-	13,480	
Santa Clara	18,460	-	-	-	170	830	180	-	-	200	-	-	60	3,450	430	340	1,240	-	680	420	5,480	740	4,240
Santa Cruz	17,020	-	-	-	7,030	330	-	-	-	-	-	-	-	4,150	-	-	-	-	-	-	-	5,510	
Shasta	2,670	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,670	
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Siskiyou	2,780	-	-	-	-	-	-	-	-	-	-	-	-	1,390	-	-	-	-	-	-	-	1,390	
Solano	15,460	-	-	-	-	-	-	-	-	-	-	-	-	-	580	-	-	-	-	-	-	13,000	1,880
Sonoma	360	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	360	
Stanislaus	37,080	-	-	-	2,530	-	2,280	-	630	-	-	-	-	-	-	-	1,350	2,010	750	-	22,610	4,920	
Sutter	12,780	-	-	-	-	-	-	3,170	-	-	-	-	-	-	-	-	-	-	-	-	8,970	640	
Tehama	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tulare	3,130	-	-	-	680	760	-	-	-	-	-	700	-	-	-	-	-	-	-	990	-	-	
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ventura	49,860	-	-	17,460	980	2,380	-	490	-	10,250	200	-	2,530	510	-	2,140	-	1,080	120	1,890	2,260	7,570	
Yolo	61,800	-	-	-	-	-	2,130	-	-	-	-	-	-	-	-	-	-	-	-	-	48,130	11,540	
Yuba	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Other- not located	153,400	750	4,510	-	2,190	7,020	2,460	3,240	51,180	2,840	8,200	2,380	970	3,360	2,260	1,340	490	310	11,660	2,700	6,670	19,290	19,580
STATE TOTALS	#####	14,730	49,610	-	54,960	105,710	16,410	84,020	67,170	29,590	23,570	6,900	21,910	302,070	47,860	1,680	16,420	2,930	24,050	13,230	100,930	469,920	198,770

**Table 23: Technical Vegetable Crop Biomass (BDT/yr), 2007**

County Name	Total Vegetable	Artichokes	Asparagus	Green Lima Beans	combined Berries	Broccoli	Cabbage	combined Melons	Carrots	Cauliflower	Celery	Cucumbers	combined Garlic	combined Lettuce	Dry Onions	Hot Peppers	Sweet Peppers	Spices & Herbs	Spinach	Squash	Sweet Corn	Tomatoes & Eggplant	combined unspecified vegetables
Alameda	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Amador	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Butte	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	
Calaveras	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Colusa	1,210	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,200	
Contra Costa	7,330	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7,180	100	
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	
El Dorado	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Fresno	26,320	-	190	-	-	490	-	1,890	-	-	-	-	770	1,480	1,140	-	110	-	-	60	11,120	8,930	140
Glenn	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Humboldt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Imperial	19,560	-	90	-	-	510	70	660	640	130	-	-	-	1,750	490	-	-	170	-	14,760	-	290	
Inyo	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	
Kern	690	-	-	-	-	-	-	-	210	-	-	-	140	50	210	-	80	-	-	-	-	-	
Kings	1,870	-	-	-	-	-	-	-	40	-	-	-	60	-	-	-	-	-	-	-	1,370	400	
Lake	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Lassen	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	
Los Angeles	10	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Madera	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	370	
Marin	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	
Mariposa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mendocino	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	
Merced	2,920	-	-	-	-	10	-	-	420	-	-	-	-	-	-	-	-	-	-	-	-	1,770	
Modoc	400	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	340	
Mono	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Monterey	15,780	620	360	-	-	640	1,800	250	-	60	650	-	-	10	-	70	9,060	80	40	10	20	-	40
Napa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Orange	140	-	-	-	-	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	
Placer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Riverside	6,370	60	-	-	-	20	150	10	300	80	40	10	-	-	230	10	-	190	30	30	10	4,720	
Sacramento	640	-	110	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	330	
San Benito	1,450	20	-	-	-	-	20	30	-	-	30	-	-	570	80	-	70	-	170	-	-	80	
San Bernardino	400	-	-	-	-	10	-	110	-	-	-	-	10	-	-	10	-	-	-	10	180	60	
San Diego	920	-	-	-	-	60	-	-	10	-	-	30	-	20	-	-	10	30	-	10	520	150	
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
San Joaquin	10,330	-	1,510	-	-	30	-	-	130	-	-	130	-	-	90	-	40	-	200	4,470	3,360	370	
San Luis Obispo	1,750	-	-	-	-	70	490	60	-	110	50	-	-	410	-	-	30	-	20	20	-	490	
San Mateo	120	10	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-	-	-	-	-	80	
Santa Barbara	3,860	-	-	-	-	400	1,220	50	-	370	160	-	-	860	-	-	20	-	50	60	-	670	
Santa Clara	3,380	-	-	-	-	10	40	10	-	-	10	-	-	170	20	20	60	-	30	20	2,740	40	
Santa Cruz	860	-	-	-	-	350	20	-	-	-	-	-	210	-	-	-	-	-	-	-	-		
Shasta	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	130	
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Siskiyou	140	-	-	-	-	-	-	-	-	-	-	-	-	70	-	-	-	-	-	-	-	70	
Solano	770	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	-	-	650	
Sonoma	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	
Stanislaus	1,860	-	-	-	-	130	-	110	-	30	-	-	-	-	-	70	100	40	-	1,130	250		
Sutter	640	-	-	-	-	-	-	160	-	-	-	-	-	-	-	-	-	-	-	-	-	450	
Tehama	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tulare	610	-	-	-	-	30	40	-	-	-	-	40	-	-	-	-	-	-	-	500	-	-	
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ventura	3,350	-	-	-	-	870	50	120	-	20	-	510	10	-	130	30	-	110	-	50	10	950	
Yolo	3,100	-	-	-	-	-	-	-	110	-	-	-	-	-	-	-	-	-	-	-	2,410		
Yuba	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Other- not located	10,680	40	230	-	110	350	120	160	2,560	140	410	120	50	170	110	70	20	20	580	140	3,340	960	
STATE TOTALS	128,000	750	2,490	-	2,740	5,310	830	4,200	3,360	1,470	1,180	340	1,110	15,110	2,400	90	810	160	1,200	680	50,510	23,500	
																						9,930	

**Table 24: Gross Vegetable Crop Biomass (BDT/yr), 2010**

County Name	Total Vegetable	Artichokes	Asparagus	Green Lima Beans	combined Berries	Broccoli	Cabbage	combined Melons	Carrots	Cauliflower	Celery	Cucumbers	combined Garlic	combined Lettuce	Dry Onions	Hot Peppers	Sweet Peppers	Spices & Herbs	Spinach	Squash	Sweet Corn	Tomatoes & Eggplant	combined unspecified vegetables
Alameda	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Amador	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Butte	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240	
Calaveras	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Colusa	24,200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24,110	
Contra Costa	18,200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,970	100	
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,030	
El Dorado	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Fresno	327,800	-	3,920	-	-	9,990	-	35,980	-	-	-	-	15,590	30,600	22,370	-	2,030	-	-	1,130	23,480	179,960	2,710
Glenn	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Humboldt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Imperial	129,400	-	1,760	-	-	10,440	1,330	12,610	12,710	2,410	-	-	-	36,180	9,730	-	-	5,260	-	31,170	-	5,800	
Inyo	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	450	
Kern	13,200	-	-	-	-	-	-	-	-	-	-	-	2,750	990	4,040	-	1,540	-	-	-	-	-	-
Kings	37,500	-	-	-	-	-	-	-	770	-	-	-	1,150	-	-	-	-	-	-	-	27,600	7,940	
Lake	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	
Lassen	1,700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,700	
Los Angeles	200	-	-	-	140	-	-	-	-	-	-	-	-	-	-	-	-	40	-	-	-	-	
Madera	8,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7,470	600	
Marin	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	270	
Mariposa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mendocino	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	380	
Merced	58,300	-	-	-	140	-	-	-	7,950	-	-	-	-	-	-	-	-	-	-	-	35,770	14,430	
Modoc	8,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6,830	
Mono	100	-	-	-	-	-	-	-	-	-	-	-	130	-	-	-	-	-	-	-	-	-	
Monterey	321,000	11,890	7,280	-	12,740	36,950	5,110	-	1,110	12,090	-	-	1,350	187,370	1,480	-	700	100	-	370	-	860	41,560
Napa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Orange	2,200	-	-	-	2,120	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	60	20	
Placer	100	-	-	-	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Riverside	43,000	1,110	-	-	470	2,990	270	5,780	1,510	770	260	-	-	4,810	220	-	3,590	560	800	280	9,960	720	8,880
Sacramento	13,000	-	2,260	-	130	-	-	-	-	-	-	-	-	-	-	-	-	-	1,240	-	6,690	2,690	
San Benito	30,800	380	-	-	-	500	620	-	-	-	550	-	-	11,690	1,480	-	1,360	-	5,080	-	1,620	7,530	
San Bernardino	4,800	-	-	-	170	-	2,160	-	-	-	-	250	-	-	220	-	-	60	-	130	380	140	
San Diego	9,100	-	-	-	1,290	-	-	120	-	-	-	610	-	440	-	-	200	510	-	260	1,090	3,030	1,560
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
San Joaquin	127,600	-	30,660	-	650	-	-	2,460	-	-	-	2,490	-	-	1,810	-	790	-	4,090	9,430	67,780	7,420	
San Luis Obispo	35,400	-	-	-	1,400	9,990	1,110	-	-	2,030	1,000	-	-	8,530	-	-	630	-	500	300	-	9,870	
San Mateo	2,300	130	-	-	60	-	-	-	-	-	-	-	150	-	-	-	-	-	-	310	-	1,620	
Santa Barbara	78,100	-	-	-	8,070	24,970	930	-	-	6,850	3,200	-	-	17,700	-	-	330	-	1,420	1,110	-	13,480	
Santa Clara	19,200	-	-	-	170	850	180	-	-	200	-	-	60	3,570	420	340	1,160	-	1,030	420	5,790	750	
Santa Cruz	17,200	-	-	-	7,030	340	-	-	-	-	-	-	-	4,290	-	-	-	-	-	-	-	5,510	
Shasta	2,700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,670	
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Siskiyou	2,800	-	-	-	-	-	-	-	-	-	-	-	-	1,370	-	-	-	-	-	-	-	1,390	
Solano	15,500	-	-	-	-	-	-	-	-	-	-	-	-	-	540	-	-	-	-	-	-	13,100	
Sonoma	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	360	
Stanislaus	38,200	-	-	-	-	2,600	-	2,170	-	580	-	-	-	-	-	-	1,350	3,050	750	-	22,790	4,920	
Sutter	12,700	-	-	-	-	-	-	3,010	-	-	-	-	-	-	-	-	-	-	-	-	9,040	640	
Tehama	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tulare	3,200	-	-	-	680	780	-	-	-	-	-	650	-	-	-	-	-	-	-	1,050	-	-	
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ventura	50,700	-	-	17,460	1,010	2,410	-	480	-	10,440	180	-	2,620	500	-	2,000	-	1,640	120	2,000	2,280	7,570	
Yolo	62,100	-	-	-	-	-	-	2,020	-	-	-	-	-	-	-	-	-	-	-	-	48,510	11,540	
Yuba	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Other- not located	159,300	720	4,590	-	2,190	7,210	2,490	3,080	50,630	2,630	8,350	2,200	980	3,470	2,230	1,340	460	310	17,670	2,700	7,040	19,440	19,580
STATE TOTALS	1,679,000	14,230	50,470	-	54,960	108,620	16,610	79,860	66,440	27,360	24,000	6,380	22,160	312,260	47,170	1,680	15,330	2,930	36,450	####	106,610	473,650	198,770

**Table 25: Technical Vegetable Crop Biomass (BDT/yr), 2010**

County Name	Total Vegetable	Artichokes	Asparagus	Green Lima Beans	combined Berries	Broccoli	Cabbage	combined Melons	Carrots	Cauliflower	Celery	Cucumbers	combined Garlic	combined Lettuce	Dry Onions	Hot Peppers	Sweet Peppers	Spices & Herbs	Spinach	Squash	Sweet Corn	Tomatoes & Eggplant	combined unspecified vegetables	
Alameda	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Amador	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Butte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	
Calaveras	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Colusa	1,200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,210	10	
Contra Costa	7,700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7,580	100	50	
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
El Dorado	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Fresno	27,000	-	200	-	-	500	-	1,800	-	-	-	-	780	1,530	1,120	-	100	-	-	60	11,740	9,000	140	
Glenn	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Humboldt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Imperial	20,500	-	90	-	-	520	70	630	640	120	-	-	-	-	1,810	490	-	-	260	-	15,590	-	290	
Inyo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	
Kern	700	-	-	-	-	-	-	200	-	-	-	-	140	50	200	-	80	-	-	-	-	-	-	-
Kings	1,900	-	-	-	-	-	-	40	-	-	-	-	60	-	-	-	-	-	-	-	-	1,380	400	
Lake	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Lassen	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	
Los Angeles	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Madera	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	370	30	
Marin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	
Mariposa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mendocino	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	
Merced	2,900	-	-	-	10	-	-	400	-	-	-	-	-	-	-	-	-	-	-	-	-	1,790	720	
Modoc	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	340	
Mono	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	
Monterey	16,100	590	360	-	640	1,850	260	-	60	600	-	-	70	9,370	70	-	40	10	-	20	-	40	2,080	
Napa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Orange	100	-	-	-	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	
Placer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Riverside	6,600	60	-	-	20	150	10	290	80	40	10	-	-	240	10	-	180	30	40	10	4,980	40	440	
Sacramento	600	-	110	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	330	
San Benito	1,500	20	-	-	-	30	30	-	-	-	30	-	-	-	580	70	-	70	-	250	-	80	380	
San Bernardino	400	-	-	-	10	-	110	-	-	-	-	10	-	-	-	10	-	-	-	-	10	190	10	
San Diego	1,000	-	-	-	60	-	-	10	-	-	30	-	-	20	-	-	10	30	-	10	550	150	80	
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
San Joaquin	10,600	-	1,530	-	30	-	-	120	-	-	120	-	-	-	90	-	40	-	-	200	4,720	3,390	370	
San Luis Obispo	1,800	-	-	-	70	500	60	-	100	50	-	-	-	430	-	-	30	20	-	-	-	-	490	
San Mateo	100	10	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-	-	-	-	-	-	80	
Santa Barbara	3,900	-	-	-	400	1,250	50	-	340	160	-	-	-	890	-	-	20	-	70	60	-	-	670	
Santa Clara	3,600	-	-	-	10	40	10	-	-	10	-	-	-	180	20	20	60	-	50	20	2,900	40	210	
Santa Cruz	900	-	-	-	350	20	-	-	-	-	-	-	-	210	-	-	-	-	-	-	-	-	280	
Shasta	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	130	
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Siskiyou	100	-	-	-	-	-	-	-	-	-	-	-	-	-	70	-	-	-	-	-	-	-	70	
Solano	800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-	660	
Sonoma	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	
Stanislaus	1,900	-	-	-	130	-	110	-	30	-	-	-	-	-	-	-	70	150	40	-	1,140	250		
Sutter	600	-	-	-	-	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	450	30	
Tehama	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tulare	600	-	-	-	30	40	-	-	-	-	-	30	-	-	-	-	-	-	-	-	530	-	-	
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ventura	3,400	-	-	870	50	120	-	20	-	520	10	-	130	30	-	100	-	80	10	1,000	110	380		
Yolo	3,100	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,430	580	
Yuba	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Other- not located	11,100	40	230	-	110	360	120	150	2,530	130	420	110	50	170	110	70	20	20	880	140	3,520	970	980	
STATE TOTALS	132,000	720	2,520	-	2,740	5,440	840	4,000	3,330	1,360	1,200	310	1,120	15,610	2,350	90	780	160	1,810	680	53,330	23,690	9,930	

**Table 26: Gross Vegetable Crop Biomass (BDT/yr), 2017**

County Name	Total Vegetable	Artichokes	Asparagus	Green Lima Beans	combined Berries	Broccoli	Cabbage	combined Melons	Carrots	Cauliflower	Celery	Cucumbers	combined Garlic	combined Lettuce	Dry Onions	Hot Peppers	Sweet Peppers	Spices & Herbs	Spinach	Squash	Sweet Corn	Tomatoes & Eggplant	combined unspecified vegetables
Alameda	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Amador	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Butte	240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240	
Calaveras	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Colusa	24,660	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24,560	100	
Contra Costa	20,300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	17,220	2,000	
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
El Dorado	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Fresno	332,920	-	4,080	-	-	10,650	-	31,970	-	-	-	-	16,000	33,060	21,610	-	1,730	-	-	1,130	26,680	183,300	2,710
Glenn	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Humboldt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Imperial	143,520	-	1,830	-	-	11,130	1,360	11,210	12,400	2,010	-	-	-	39,090	9,400	-	-	-	-	13,880	-	35,410	5,800
Inyo	450	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	450	
Kern	12,570	-	-	-	-	-	-	-	3,470	-	-	-	-	2,820	1,070	3,900	-	1,310	-	-	-	-	-
Kings	37,910	-	-	-	-	-	-	-	-	680	-	-	-	1,180	-	-	-	-	-	-	28,110	7,940	
Lake	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	
Lassen	1,700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,700	
Los Angeles	180	-	-	-	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Madera	8,210	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7,610	
Marin	270	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	270	
Mariposa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mendocino	380	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	380	
Merced	58,070	-	-	-	140	-	-	7,060	-	-	-	-	-	-	-	-	-	-	-	-	-	36,440	
Modoc	8,050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6,830	
Mono	140	-	-	-	-	-	-	-	-	-	-	-	-	140	-	-	-	-	-	-	-	-	
Monterey	335,810	10,970	7,580	-	12,740	39,380	5,260	-	1,080	10,070	-	-	1,380	202,420	1,430	-	600	100	-	370	-	870	41,560
Napa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Orange	2,220	-	-	-	2,120	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-	70	20	-
Placer	50	-	-	-	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Riverside	44,860	1,030	-	-	470	3,190	280	5,140	1,480	640	280	-	-	5,190	210	-	3,060	560	2,120	280	11,320	730	8,880
Sacramento	13,230	-	2,350	-	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,240	-	6,820	
San Benito	39,900	350	-	-	-	540	640	-	-	-	570	-	-	12,630	1,430	-	1,160	-	13,400	-	-	1,650	
San Bernardino	4,860	-	-	-	170	-	2,220	-	-	-	-	210	-	-	210	-	-	60	-	130	430	140	
San Diego	9,220	-	-	-	1,290	-	-	110	-	-	-	510	-	480	-	-	170	510	-	260	1,240	-	3,090
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
San Joaquin	130,530	-	31,920	-	650	-	-	2,190	-	-	2,070	-	-	1,750	-	680	-	-	4,090	10,720	69,040	7,420	
San Luis Obispo	37,170	-	-	-	1,400	10,650	1,150	-	-	1,700	1,040	-	-	9,210	-	-	530	-	1,320	300	-	9,870	
San Mateo	2,270	120	-	-	60	-	-	-	-	-	-	-	160	-	-	-	-	-	310	-	-	1,620	
Santa Barbara	82,440	-	-	-	8,070	26,610	960	-	-	5,710	3,340	-	-	19,120	-	-	280	-	3,760	1,110	-	13,480	
Santa Clara	21,850	-	-	-	170	910	190	-	-	-	210	-	60	3,850	410	340	990	-	2,720	420	6,580	760	
Santa Cruz	17,530	-	-	-	7,030	360	-	-	-	-	-	-	4,630	-	-	-	-	-	-	-	-	5,510	
Shasta	2,670	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,670	
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Siskiyou	2,710	-	-	-	-	-	-	-	-	-	-	-	1,320	-	-	-	-	-	-	-	-	1,390	
Solano	15,690	-	-	-	-	-	-	-	-	-	-	-	-	-	-	460	-	-	-	-	-	13,350	
Sonoma	360	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	360	
Stanislaus	43,460	-	-	-	-	2,770	-	1,930	-	490	-	-	-	-	-	-	1,350	8,040	750	-	23,210		
Sutter	12,530	-	-	-	-	-	-	2,680	-	-	-	-	-	-	-	-	-	-	-	-	9,210		
Tehama	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tulare	3,240	-	-	-	680	830	-	-	-	-	-	540	-	-	-	-	-	-	-	-	1,190	-	
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ventura	54,140	-	-	-	17,460	1,070	2,480	-	470	-	10,890	150	-	2,830	490	-	1,700	-	4,320	120	2,270	2,320	
Yolo	62,750	-	-	-	-	-	-	1,800	-	-	-	-	-	-	-	-	-	-	-	-	49,410		
Yuba	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Other- not located	188,390	670	4,780	-	2,190	7,690	2,560	2,740	49,370	2,190	8,710	1,830	1,010	3,750	2,150	1,330	390	310	46,640	2,700	8,000	19,800	
STATE TOTALS	1,778,000	13,140	52,540	-	54,960	115,780	17,100	70,980	64,800	22,810	25,040	5,310	22,750	337,330	45,570	1,670	13,060	2,930	96,200	13,230	121,130	482,440	
																						198,770	

**Table 27: Technical Vegetable Crop Biomass (BDT/yr), 2017**

County Name	Total Vegetable	Artichokes	Asparagus	Green Lima Beans	combined Berries	Broccoli	Cabbage	combined Melons	Carrots	Cauliflower	Celery	Cucumbers	combined Garlic	combined Lettuce	Dry Onions	Hot Peppers	Sweet Peppers	Spices & Herbs	Spinach	Squash	Sweet Corn	Tomatoes & Eggplant	combined unspecified vegetables
Alameda	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Amador	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Butte	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	
Calaveras	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Colusa	1,240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,230	
Contra Costa	8,760	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8,610	100	
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	
El Dorado	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Fresno	28,660	-	200	-	-	530	-	1,600	-	-	-	-	800	1,650	1,080	-	90	-	-	60	13,340	9,170	140
Glenn	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Humboldt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Imperial	23,110	-	90	-	-	560	70	560	620	100	-	-	-	1,950	470	-	-	-	690	-	17,710	-	290
Inyo	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	
Kern	630	-	-	-	-	-	-	170	-	-	-	-	140	50	200	-	70	-	-	-	-	-	-
Kings	1,900	-	-	-	-	-	-	30	-	-	-	-	60	-	-	-	-	-	-	-	-	1,410	
Lake	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Lassen	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	
Los Angeles	10	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Madera	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	380	
Marin	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	
Mariposa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mendocino	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	
Merced	2,900	-	-	-	10	-	-	350	-	-	-	-	-	-	-	-	-	-	-	-	-	1,820	
Modoc	400	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	340	
Mono	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Monterey	16,790	550	380	-	640	1,970	260	-	50	500	-	-	70	10,120	70	-	30	10	-	20	-	40	2,080
Napa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Orange	150	-	-	-	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	
Placer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Riverside	7,320	50	-	20	160	10	260	70	30	10	-	-	-	260	10	-	150	30	110	10	5,660	40	440
Sacramento	660	-	120	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	340	130	
San Benito	2,000	20	-	-	30	30	-	-	30	-	-	-	-	630	70	-	60	-	670	-	-	80	380
San Bernardino	440	-	-	10	-	110	-	-	-	-	-	-	10	-	-	-	-	-	10	220	10	60	
San Diego	1,020	-	-	60	-	-	10	-	-	-	30	-	20	-	-	10	30	-	10	620	150	80	
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
San Joaquin	11,340	-	1,600	-	30	-	-	110	-	-	100	-	-	90	-	30	-	-	200	5,360	3,450	370	
San Luis Obispo	1,870	-	-	70	530	60	-	-	90	50	-	460	-	-	30	-	70	20	-	-	-	490	
San Mateo	120	10	-	-	-	-	-	-	-	-	-	10	-	-	-	-	-	-	-	20	-	80	
Santa Barbara	4,130	-	-	400	1,330	50	-	-	290	170	-	-	960	-	-	10	-	190	60	-	-	670	
Santa Clara	4,060	-	-	10	50	10	-	-	10	-	-	190	20	20	50	-	140	20	3,290	40	210		
Santa Cruz	880	-	-	350	20	-	-	-	-	-	-	230	-	-	-	-	-	-	-	-	-	280	
Shasta	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	130	
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Siskiyou	140	-	-	-	-	-	-	-	-	-	-	-	-	70	-	-	-	-	-	-	-	70	
Solano	780	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-	-	-	-	-	670	
Sonoma	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	
Stanislaus	2,180	-	-	-	140	-	100	-	20	-	-	-	-	-	-	-	70	400	40	-	1,160	250	
Sutter	620	-	-	-	-	-	130	-	-	-	-	-	-	-	-	-	-	-	-	-	460	30	
Tehama	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tulare	700	-	-	30	40	-	-	-	-	-	30	-	-	-	-	-	-	-	600	-	-		
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ventura	3,730	-	-	870	50	120	-	20	-	540	10	-	140	20	-	90	-	220	10	1,140	120	380	
Yolo	3,140	-	-	-	-	-	90	-	-	-	-	-	-	-	-	-	-	-	-	-	2,470	580	
Yuba	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Other- not located	13,040	30	240	-	110	380	130	140	2,470	110	440	90	50	1,140	16,850	2,280	90	660	160	4,820	680	60,590	24,130
STATE TOTALS	143,000	660	2,630	-	2,740	5,790	850	3,550	3,230	1,140	1,250	270	1,140	16,850	2,280	90	660	160	4,820	680	60,590	24,130	
																						9,930	

**Table 28: Gross Vegetable Crop Biomass (BDT/yr), 2020**

County Name	Total Vegetable	Artichokes	Asparagus	Green Lima Beans	combined Berries	Broccoli	Cabbage	combined Melons	Carrots	Cauliflower	Celery	Cucumbers	combined Garlic	combined Lettuce	Dry Onions	Hot Peppers	Sweet Peppers	Spices & Herbs	Spinach	Squash	Sweet Corn	Tomatoes & Eggplant	combined unspecified vegetables
Alameda	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Amador	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Butte	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240	
Calaveras	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Colusa	24,900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24,750	100	
Contra Costa	21,300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	18,190	2,020	
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,030	
El Dorado	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Fresno	335,500	-	4,150	-	-	10,940	-	30,390	-	-	-	-	16,180	34,170	21,300	-	1,620	-	-	1,130	28,180	184,750	2,710
Glenn	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Humboldt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Imperial	153,400	-	1,860	-	-	11,440	1,380	10,650	12,260	1,860	-	-	-	40,400	9,260	-	-	-	21,040	-	37,400	-	5,800
Inyo	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	450	
Kern	12,300	-	-	-	-	-	-	-	3,300	-	-	-	2,860	1,110	3,850	-	1,220	-	-	-	-	-	-
Kings	38,100	-	-	-	-	-	-	-	650	-	-	-	1,200	-	-	-	-	-	-	-	28,330	7,940	
Lake	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	
Lassen	1,700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,700	
Los Angeles	200	-	-	-	140	-	-	-	-	-	-	-	-	-	-	-	-	40	-	-	-	-	
Madera	8,300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7,670	
Marin	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	270	
Mariposa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mendocino	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	380	
Merced	58,000	-	-	-	140	-	-	6,710	-	-	-	-	-	-	-	-	-	-	-	-	36,730	14,430	
Modoc	8,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6,830	
Mono	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Monterey	342,800	10,600	7,720	-	12,740	40,470	5,330	-	1,070	9,320	-	-	-	1,400	209,240	1,410	-	560	100	-	370	-	880
Napa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Orange	2,200	-	-	-	2,120	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	80	20	
Placer	100	-	-	-	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Riverside	46,300	990	-	-	470	3,280	280	4,880	1,460	590	280	-	-	5,370	210	-	2,860	560	3,210	280	11,950	730	8,880
Sacramento	13,300	-	2,390	-	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,240	-	6,870	
San Benito	47,200	340	-	-	550	640	-	-	-	580	-	-	-	13,060	1,410	-	1,080	-	20,310	-	-	1,670	
San Bernardino	4,900	-	-	-	170	-	2,250	-	-	-	-	190	-	-	210	-	-	60	-	130	460	140	
San Diego	9,300	-	-	-	1,290	-	-	100	-	-	-	470	-	500	-	-	160	510	-	260	1,310	3,110	1,560
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
San Joaquin	131,900	-	32,480	-	650	-	-	2,080	-	-	-	1,910	-	-	1,730	-	630	-	-	4,090	11,320	69,590	7,420
San Luis Obispo	38,300	-	-	-	1,400	10,940	1,160	-	-	1,570	1,060	-	-	9,520	-	-	500	-	2,000	300	-	9,870	
San Mateo	2,300	110	-	-	60	-	-	-	-	-	-	160	-	-	-	-	-	-	-	310	-	-	
Santa Barbara	85,400	-	-	-	8,070	27,350	970	-	-	5,280	3,400	-	-	19,760	-	-	260	-	5,700	1,110	-	13,480	
Santa Clara	23,700	-	-	-	170	930	190	-	-	220	-	60	3,980	400	340	920	-	4,120	420	6,950	770	4,240	
Santa Cruz	17,700	-	-	-	7,030	370	-	-	-	-	-	-	-	4,790	-	-	-	-	-	-	5,510		
Shasta	2,700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,670	
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Siskiyou	2,700	-	-	-	-	-	-	-	-	-	-	-	-	-	1,300	-	-	-	-	-	-	1,390	
Solano	15,800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	430	-	-	-	-	13,450	
Sonoma	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	360	
Stanislaus	47,700	-	-	-	-	2,850	-	1,830	-	450	-	-	-	-	-	-	1,350	12,190	750	-	23,400		
Sutter	12,500	-	-	-	-	-	-	2,550	-	-	-	-	-	-	-	-	-	-	-	-	9,280		
Tehama	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tulare	3,300	-	-	-	680	860	-	-	-	-	-	500	-	-	-	-	-	-	-	1,250	-	-	
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ventura	56,700	-	-	-	17,460	1,100	2,510	-	470	-	11,090	140	-	2,920	480	-	1,590	-	6,550	120	2,400	2,340	
Yolo	63,100	-	-	-	-	-	-	-	1,710	-	-	-	-	-	-	-	-	-	-	49,810	11,540		
Yuba	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Other not located	212,600	650	4,860	-	2,190	7,900	2,590	2,600	48,840	2,020	8,870	1,690	1,020	3,880	2,120	1,330	360	310	70,690	2,700	8,450	19,960	
STATE TOTALS	1,846,000	12,690	53,460	-	54,960	118,980	17,300	67,450	64,100	21,090	25,500	4,900	23,020	348,700	44,920	1,670	12,190	2,930	145,810	####	127,940	486,270	
																					198,770		

**Table 29: Technical Vegetable Crop Biomass (BDT/yr), 2020**

County Name	Total Vegetable	Artichokes	Asparagus	Green Lima Beans	combined Berries	Broccoli	Cabbage	combined Melons	Carrots	Cauliflower	Celery	Cucumbers	combined Garlic	combined Lettuce	Dry Onions	Hot Peppers	Sweet Peppers	Spices & Herbs	Spinach	Squash	Sweet Corn	Tomatoes & Eggplant	combined unspecified vegetables	
Alameda	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Amador	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Butte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10		
Calaveras	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Colusa	1,300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,240	10	
Contra Costa	9,300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9,100	100	50
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
El Dorado	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Fresno	29,500	-	210	-	-	550	-	1,520	-	-	-	-	810	1,710	1,070	-	80	-	-	60	14,090	9,240	140	
Glen	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Humboldt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Imperial	24,500	-	90	-	-	570	70	530	610	90	-	-	-	2,020	460	-	-	-	1,050	-	18,700	-	290	
Inyo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	
Kern	600	-	-	-	-	-	-	-	170	-	-	-	140	60	190	-	60	-	-	-	-	-	-	-
Kings	1,900	-	-	-	-	-	-	-	30	-	-	-	60	-	-	-	-	-	-	-	-	1,420	400	
Lake	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Lassen	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	
Los Angeles	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Madera	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	380	30	
Marin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	
Mariposa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Mendocino	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	
Merced	2,900	-	-	-	10	-	-	340	-	-	-	-	-	-	-	-	-	-	-	-	-	1,840	720	
Modoc	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	340	
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-	-	
Monterey	17,200	530	390	-	-	640	2,020	270	-	50	470	-	-	70	10,460	70	-	30	10	-	20	-	40	2,080
Napa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Orange	200	-	-	-	-	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	
Placer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Riverside	7,700	50	-	-	20	160	10	240	70	30	10	-	-	270	10	-	140	30	160	10	5,980	40	440	
Sacramento	700	-	120	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	340	130	
San Benito	2,400	20	-	-	-	30	30	-	-	-	30	-	-	650	70	-	50	-	1,020	-	-	80	380	
San Bernardino	500	-	-	-	10	-	110	-	-	-	-	10	-	-	10	-	-	-	-	10	230	10	60	
San Diego	1,100	-	-	-	60	-	-	10	-	-	20	-	-	30	-	-	10	30	-	10	660	160	80	
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
San Joaquin	11,700	-	1,620	-	30	-	-	100	-	-	100	-	-	90	-	-	30	-	200	5,660	3,480	370		
San Luis Obispo	1,900	-	-	-	70	550	60	-	-	80	50	-	-	480	-	-	30	-	100	20	-	490		
San Mateo	100	10	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-	-	-	20	-	-	80	
Santa Barbara	-	-	-	-	400	1,370	50	-	260	170	-	-	990	-	-	10	-	290	60	-	-	670		
Santa Clara	4,300	-	-	-	10	50	10	-	-	10	-	-	200	20	20	50	-	210	20	3,480	40	210		
Santa Cruz	900	-	-	-	350	20	-	-	-	-	-	-	240	-	-	-	-	-	-	-	-	280		
Shasta	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	130	
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Siskiyou	100	-	-	-	-	-	-	-	-	-	-	-	-	70	-	-	-	-	-	-	-	-	70	
Solano	800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-	-	-	670	90	
Sonoma	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	
Stanislaus	2,400	-	-	-	-	140	-	90	-	20	-	-	-	-	-	-	70	610	40	-	1,170	250		
Sutter	600	-	-	-	-	-	-	130	-	-	-	-	-	-	-	-	-	-	-	-	-	460	30	
Tehama	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tulare	700	-	-	-	30	40	-	-	-	-	30	-	-	-	-	-	-	-	-	-	630	-	-	
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ventura	3,900	-	-	-	870	60	130	-	20	-	550	10	-	150	20	-	80	-	330	10	1,200	120	380	
Yolo	3,200	-	-	-	-	-	-	-	90	-	-	-	-	-	-	-	-	-	-	-	-	2,490	580	
Yuba	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Other-not located	14,400	30	240	-	110	400	130	130	2,440	100	440	80	50	190	110	70	20	20	3,530	140	4,230	1,000	980	
STATE TOTALS	150,000	640	2,670	-	2,740	5,960	870	3,380	3,190	1,050	1,260	250	1,150	17,450	2,250	90	610	160	7,300	680	64,000	24,320	9,930	

## 2.1.4 Food and Fiber Processing Residues

Food and fiber processing operations in the state produce a variety of biomass feedstocks including nut shells, fruit pits, hulls, cotton gin trash, meat processing residues, grape and tomato pomace, cheese whey, beverage wastes, and waste water streams containing sugars and other degradable solids. Total solids from shells, pits, hulls, cotton gin trash, and meat processing exceed 1.5 million BDT/y in the state. Distribution within the state is shown in Figure 4.

Gross quantities of almond shell, walnut shell, fruit pits, and olive pits are from the year 2000 GE-EER study, updated to the annual CBC estimates using average crop growth rates (section 2.1.1 and Table 30). Cotton gin trash was estimated from a trash yield of 150 pounds per cotton bale.<sup>5</sup> Average bale weight in California is 480 lbs. Rice hull biomass was estimated from an average yield of 20% dry weight of total rice. Meat processing residues were assessed through a partial phone survey of individual processors throughout the state in 2003.

**Table 30: Computed Yield of Certain Food/Fiber Processing Residues**

Biomass Type	Dry Yield (tons/acre-y)	Growth rates (%/y)
Almond Shell	0.45	0.0*
Walnut Shell	0.62	0.00
Garlic & Onions	-	-
Stone Fruit	0.16	0.95
Other Fruit	-	-
Olive	0.31	-1.14
Winery	-	-
Rice Hull	0.67	0.00
Cotton Gin Waste	0.19	-1.68

Except for meat processing residues, resource quantities for 2007 to 2020 were again projected from base year data using escalation rates derived from production trends over the previous 10 years as listed in Table 30. This results in a slight resource growth over the period. Due to uncertainties in the meat processing inventory, this category was not escalated although it might be expected to increase in accordance with population.

Technical residue availability for all food and fiber residues was assumed to be 80%. Losses in handling should be reduced compared to other agricultural sources due to the fewer number of operations required prior to conversion. Estimated gross and technical biomass quantities for each crop type by county are listed in Tables 31 - 38 for years 2007, 2010, 2017, and 2020.

<sup>5</sup> USEPA AP 42 <http://www.epa.gov/ttn/chief/ap42/ch09/final/c9s07.pdf>

**Figure 4: Food and Fiber Processing Residues (gross BDT/yr) in California, 2007.**



**Table 31: Gross Food and Fiber Processing Residue (BDT/yr), 2007**

County Name	Total Food Processing	Almond Shell	Walnut Shell	Garlic & Onions	Olives	Tomatoes	Other Vegetables	Stone Fruit	Other Fruit	Winery	Rice Hull	Cotton Gin Waste	Meat Processing
Alameda	140	-	140	-	-	-	-	-	-	-	-	-	-
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-
Amador	220	-	220	-	-	-	-	-	-	-	-	-	-
Butte	103,230	19,250	10,680	-	-	-	-	3,300	-	-	70,000	-	-
Calaveras	1,100	-	140	-	-	-	-	-	-	960	-	-	-
Colusa	117,000	9,060	2,420	-	-	3,350	600	-	-	-	99,760	1,810	-
Contra Costa	870	30	840	-	-	-	-	-	-	-	-	-	-
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-
El Dorado	30	-	30	-	-	-	-	-	-	-	-	-	-
Fresno	134,550	24,830	3,210	-	-	5,990	-	-	-	21,120	1,380	42,000	36,020
Glenn	72,480	6,040	3,750	-	120	-	-	-	-	-	62,250	320	-
Humboldt	50	-	-	-	-	-	-	-	-	-	-	-	50
Imperial	2,000	-	-	-	-	-	-	-	-	-	-	2,000	-
Inyo	2,230	-	-	-	-	-	-	-	-	-	-	-	2,230
Kern	142,970	70,850	2,250	-	-	3,400	-	-	-	43,200	-	23,270	-
Kings	55,730	2,260	4,110	20	-	4,980	-	16,910	-	-	-	27,450	-
Lake	1,870	-	1,870	-	-	-	-	-	-	-	-	-	-
Lassen	-	-	-	-	-	-	-	-	-	-	-	-	-
Los Angeles	520	-	-	-	-	-	-	-	-	-	-	-	520
Madera	53,710	25,380	1,340	1,610	-	-	-	290	-	21,120	-	3,970	-
Marin	-	-	-	-	-	-	-	-	-	-	-	-	-
Mariposa	-	-	-	-	-	-	-	-	-	-	-	-	-
Mendocino	9,600	-	-	-	-	-	-	-	-	9,600	-	-	-
Merced	192,050	44,890	6,920	-	-	13,090	-	370	-	76,800	3,210	10,720	36,050
Modoc	-	-	-	-	-	-	-	-	-	-	-	-	-
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-
Monterey	22,280	-	200	-	-	-	-	-	-	22,080	-	-	-
Napa	18,160	-	80	-	-	-	-	-	-	18,080	-	-	-
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-
Orange	1,570	-	-	-	-	-	-	-	1,570	-	-	-	-
Placer	7,190	-	970	-	-	-	-	-	-	-	-	6,220	-
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-
Riverside	3,200	-	40	-	-	-	-	-	-	-	-	3,160	-
Sacramento	6,150	-	80	-	-	-	-	-	-	-	-	6,070	-
San Benito	4,140	-	2,270	960	-	910	-	-	-	-	-	-	-
San Bernardino	2,080	-	-	-	-	-	-	-	-	-	-	230	1,850
San Diego	-	-	-	-	-	-	-	-	-	-	-	-	-
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-
San Joaquin	181,130	23,460	22,550	-	4,770	-	-	-	-	127,040	3,280	-	30
San Luis Obispo	910	90	820	-	-	-	-	-	-	-	-	-	-
San Mateo	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Barbara	7,320	-	540	-	-	-	-	-	-	6,780	-	-	-
Santa Clara	4,300	-	740	3,400	-	-	-	130	-	30	-	-	-
Santa Cruz	90	-	-	-	-	-	-	-	90	-	-	-	-
Shasta	530	-	530	-	-	-	-	-	-	-	-	-	-
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-
Siskiyou	-	-	-	-	-	-	-	-	-	-	-	-	-
Solano	2,370	490	1,650	-	-	-	-	-	-	-	-	-	230
Sonoma	13,550	-	30	-	-	-	-	-	-	12,480	-	-	1,040
Stanislaus	147,510	47,820	19,700	-	-	7,530	900	11,110	-	57,600	1,430	-	1,420
Sutter	81,860	2,240	9,710	-	-	-	-	-	-	-	69,560	340	10
Tehama	15,470	2,240	8,420	-	4,290	-	-	-	-	-	520	-	-
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-
Tulare	38,640	6,790	19,660	-	-	-	-	-	-	-	-	12,190	-
Tuolumne	40	-	-	-	-	-	-	-	-	-	-	-	40
Ventura	2,830	-	-	1,960	-	-	-	-	870	-	-	-	-
Yolo	30,210	3,510	4,960	-	-	80	-	-	-	1,600	19,300	760	-
Yuba	35,880	960	5,350	-	-	-	-	1,170	-	-	28,400	-	-
Other- not located	-	-	-	-	-	-	-	-	-	-	-	-	-
STATE TOTALS	1,518,000	290,190	136,220	7,950	9,180	39,330	1,500	33,280	2,530	418,490	371,380	128,220	79,490

**Table 32: Technical Food and Fiber Processing Residue (BDT/yr), 2007**

County Name	Total Food Processing	Almond Shell	Walnut Shell	Garlic & Onions	Olives	Tomatoes	Other Vegetables	Stone Fruit	Other Fruit	Winery	Rice Hull	Cotton Gin Waste	Meat Processing
Alameda	110	-	110	-	-	-	-	-	-	-	-	-	-
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-
Amador	180	-	180	-	-	-	-	-	-	-	-	-	-
Butte	26,580	15,400	8,540	-	-	-	-	2,640	-	-	56,000	-	-
Calaveras	880	-	110	-	-	-	-	-	-	770	-	-	-
Colusa	12,350	7,250	1,940	-	-	2,680	480	-	-	-	79,810	1,450	-
Contra Costa	690	20	670	-	-	-	-	-	-	-	-	-	-
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-
El Dorado	20	-	20	-	-	-	-	-	-	-	-	-	-
Fresno	44,120	19,860	2,570	-	-	4,790	-	-	-	16,900	1,100	33,600	28,820
Glenn	7,930	4,830	3,000	-	100	-	-	-	-	-	49,800	260	-
Humboldt	-	-	-	-	-	-	-	-	-	-	-	-	40
Imperial	-	-	-	-	-	-	-	-	-	-	-	1,600	-
Inyo	-	-	-	-	-	-	-	-	-	-	-	-	1,780
Kern	95,760	56,680	1,800	-	-	2,720	-	-	-	34,560	-	18,620	-
Kings	22,630	1,810	3,290	20	-	3,980	-	13,530	-	-	-	21,960	-
Lake	1,500	-	1,500	-	-	-	-	-	-	-	-	-	-
Lassen	-	-	-	-	-	-	-	-	-	-	-	-	-
Los Angeles	-	-	-	-	-	-	-	-	-	-	-	-	420
Madera	39,790	20,300	1,070	1,290	-	-	-	230	-	16,900	-	3,180	-
Marin	-	-	-	-	-	-	-	-	-	-	-	-	-
Mariposa	-	-	-	-	-	-	-	-	-	-	-	-	-
Mendocino	7,680	-	-	-	-	-	-	-	-	7,680	-	-	-
Merced	113,660	35,910	5,540	-	-	10,470	-	300	-	61,440	2,570	8,580	28,840
Modoc	-	-	-	-	-	-	-	-	-	-	-	-	-
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-
Monterey	17,820	-	160	-	-	-	-	-	-	17,660	-	-	-
Napa	14,520	-	60	-	-	-	-	-	-	14,460	-	-	-
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-
Orange	1,260	-	-	-	-	-	-	1,260	-	-	-	-	-
Placer	780	-	780	-	-	-	-	-	-	-	4,980	-	-
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-
Riverside	30	-	30	-	-	-	-	-	-	-	-	2,530	-
Sacramento	60	-	60	-	-	-	-	-	-	-	4,860	-	-
San Benito	3,320	-	1,820	770	-	730	-	-	-	-	-	-	-
San Bernardino	-	-	-	-	-	-	-	-	-	-	-	180	1,480
San Diego	-	-	-	-	-	-	-	-	-	-	-	-	-
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-
San Joaquin	142,260	18,770	18,040	-	3,820	-	-	-	-	101,630	2,620	-	20
San Luis Obispo	730	70	660	-	-	-	-	-	-	-	-	-	-
San Mateo	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Barbara	5,850	-	430	-	-	-	-	-	-	5,420	-	-	-
Santa Clara	3,430	-	590	2,720	-	-	-	100	-	20	-	-	-
Santa Cruz	70	-	-	-	-	-	-	-	70	-	-	-	-
Shasta	420	-	420	-	-	-	-	-	-	-	-	-	-
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-
Siskiyou	-	-	-	-	-	-	-	-	-	-	-	-	-
Solano	1,710	390	1,320	-	-	-	-	-	-	-	-	-	180
Sonoma	10,000	-	20	-	-	-	-	-	-	9,980	-	-	830
Stanislaus	115,730	38,260	15,760	-	-	6,020	720	8,890	-	46,080	1,140	-	1,140
Sutter	9,560	1,790	7,770	-	-	-	-	-	-	-	55,650	270	10
Tehama	11,960	1,790	6,740	-	3,430	-	-	-	-	-	420	-	-
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-
Tulare	21,160	5,430	15,730	-	-	-	-	-	-	-	-	9,750	-
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	30
Ventura	2,270	-	-	1,570	-	-	-	-	700	-	-	-	-
Yolo	8,120	2,810	3,970	-	-	60	-	-	-	1,280	15,440	610	-
Yuba	5,990	770	4,280	-	-	-	-	940	-	-	22,720	-	-
Other- not located	-	-	-	-	-	-	-	-	-	-	-	-	-
STATE TOTALS	1,214,000	232,140	108,980	6,370	7,350	31,450	1,200	26,630	2,030	334,780	297,110	102,590	63,590

**Table 33: Gross Food and Fiber Processing Residue (BDT/yr), 2010**

County Name	Total Food Processing	Almond Shell	Walnut Shell	Garlic & Onions	Olives	Tomatoes	Other Vegetables	Stone Fruit	Other Fruit	Winery	Rice Hull	Cotton Gin Waste	Meat Processing
Alameda	100	-	140	-	-	-	-	-	-	-	-	-	-
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-
Amador	200	-	230	-	-	-	-	-	-	-	-	-	-
Butte	109,200	20,750	10,930	-	-	-	-	3,390	-	-	74,140	-	-
Calaveras	1,100	-	140	-	-	-	-	-	-	960	-	-	-
Colusa	123,500	9,760	2,480	-	-	3,380	600	-	-	-	105,670	1,560	-
Contra Costa	900	30	860	-	-	-	-	-	-	-	-	-	-
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-
El Dorado	-	-	30	-	-	-	-	-	-	-	-	-	-
Fresno	130,800	26,760	3,290	-	-	6,040	-	-	-	21,120	1,460	36,120	36,020
Glenn	76,700	6,510	3,840	-	130	-	-	-	-	-	65,940	280	-
Humboldt	100	-	-	-	-	-	-	-	-	-	-	-	50
Imperial	1,700	-	-	-	-	-	-	-	-	-	-	1,720	-
Inyo	2,200	-	-	-	-	-	-	-	-	-	-	-	2,230
Kern	145,300	76,360	2,300	-	-	3,430	-	-	-	43,200	-	20,010	-
Kings	52,700	2,440	4,210	20	-	5,020	-	17,400	-	-	-	23,610	-
Lake	1,900	-	1,910	-	-	-	-	-	-	-	-	-	-
Lassen	-	-	-	-	-	-	-	-	-	-	-	-	-
Los Angeles	500	-	-	-	-	-	-	-	-	-	-	-	520
Madera	55,200	27,350	1,370	1,630	-	-	-	300	-	21,120	-	3,410	-
Marin	-	-	-	-	-	-	-	-	-	-	-	-	-
Mariposa	-	-	-	-	-	-	-	-	-	-	-	-	-
Mendocino	9,600	-	-	-	-	-	-	-	-	-	9,600	-	-
Merced	194,500	48,380	7,080	-	-	13,190	-	380	-	76,800	3,400	9,220	36,050
Modoc	-	-	-	-	-	-	-	-	-	-	-	-	-
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-
Monterey	22,300	-	200	-	-	-	-	-	-	-	22,080	-	-
Napa	18,200	-	80	-	-	-	-	-	-	-	18,080	-	-
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-
Orange	1,600	-	-	-	-	-	-	-	1,620	-	-	-	-
Placer	7,600	-	990	-	-	-	-	-	-	-	-	6,590	-
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-
Riverside	2,800	-	40	-	-	-	-	-	-	-	-	-	2,720
Sacramento	6,500	-	80	-	-	-	-	-	-	-	-	6,430	-
San Benito	4,200	-	2,320	970	-	920	-	-	-	-	-	-	-
San Bernardino	2,100	-	-	-	-	-	-	-	-	-	-	200	1,850
San Diego	-	-	-	-	-	-	-	-	-	-	-	-	-
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-
San Joaquin	183,900	25,280	23,080	-	5,030	-	-	-	-	127,040	3,470	-	30
San Luis Obispo	900	100	840	-	-	-	-	-	-	-	-	-	-
San Mateo	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Barbara	7,300	-	550	-	-	-	-	-	-	-	6,780	-	-
Santa Clara	4,400	-	760	3,440	-	-	-	130	-	-	30	-	-
Santa Cruz	100	-	-	-	-	-	-	-	90	-	-	-	-
Shasta	500	-	540	-	-	-	-	-	-	-	-	-	-
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-
Siskiyou	-	-	-	-	-	-	-	-	-	-	-	-	-
Solano	2,500	530	1,690	-	-	-	-	-	-	-	-	-	230
Sonoma	13,600	-	30	-	-	-	-	-	-	-	12,480	-	1,040
Stanislaus	152,200	51,540	20,170	-	-	7,590	900	11,430	-	57,600	1,510	-	1,420
Sutter	86,300	2,410	9,940	-	-	-	-	-	-	-	73,680	290	10
Tehama	16,100	2,410	8,620	-	4,530	-	-	-	-	-	-	550	-
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-
Tulare	37,900	7,320	20,130	-	-	-	-	-	-	-	-	10,480	-
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	40
Ventura	2,900	-	-	1,980	-	-	-	-	900	-	-	-	-
Yolo	31,600	3,780	5,080	-	-	80	-	-	-	1,600	20,440	650	-
Yuba	37,800	1,030	5,480	-	-	-	-	-	1,200	-	-	30,080	-
Other- not located	-	-	-	-	-	-	-	-	-	-	-	-	-
STATE TOTALS	1,550,000	312,740	139,430	8,040	9,690	39,650	1,500	34,230	2,610	418,490	393,360	110,270	79,490

**Table 34: Technical Food and Fiber Processing Residue (BDT/yr), 2010**

County Name	Total Food Processing	Almond Shell	Walnut Shell	Garlic & Onions	Olives	Tomatoes	Other Vegetables	Stone Fruit	Other Fruit	Winery	Rice Hull	Cotton Gin Waste	Meat Processing
Alameda	100	-	100	-	-	-	-	-	-	-	-	-	-
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-
Amador	200	-	200	-	-	-	-	-	-	-	-	-	-
Butte	87,300	16,600	8,700	-	-	-	-	2,710	-	-	59,310	-	-
Calaveras	900	-	100	-	-	-	-	-	-	770	-	-	-
Colusa	98,800	7,800	2,000	-	-	2,700	480	-	-	-	84,540	1,250	-
Contra Costa	700	-	700	-	-	-	-	-	-	-	-	-	-
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-
El Dorado	-	-	-	-	-	-	-	-	-	-	-	-	-
Fresno	104,600	21,400	2,600	-	-	4,830	-	-	-	16,900	1,170	28,900	28,820
Glenn	61,400	5,200	3,100	-	100	-	-	-	-	-	52,750	220	-
Humboldt	-	-	-	-	-	-	-	-	-	-	-	-	40
Imperial	1,400	-	-	-	-	-	-	-	-	-	-	1,380	-
Inyo	1,800	-	-	-	-	-	-	-	-	-	-	-	1,780
Kern	116,200	61,100	1,800	-	-	2,740	-	-	-	34,560	-	16,010	-
Kings	42,300	2,000	3,400	20	-	4,020	-	13,920	-	-	-	18,890	-
Lake	1,500	-	1,500	-	-	-	-	-	-	-	-	-	-
Lassen	-	-	-	-	-	-	-	-	-	-	-	-	-
Los Angeles	400	-	-	-	-	-	-	-	-	-	-	-	420
Madera	44,200	21,900	1,100	1,300	-	-	-	240	-	16,900	-	2,730	-
Marin	-	-	-	-	-	-	-	-	-	-	-	-	-
Mariposa	-	-	-	-	-	-	-	-	-	-	-	-	-
Mendocino	7,700	-	-	-	-	-	-	-	-	-	7,680	-	-
Merced	155,600	38,700	5,700	-	-	10,550	-	300	-	61,440	2,720	7,380	28,840
Modoc	-	-	-	-	-	-	-	-	-	-	-	-	-
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-
Monterey	17,900	-	200	-	-	-	-	-	-	17,660	-	-	-
Napa	14,600	-	100	-	-	-	-	-	-	14,460	-	-	-
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-
Orange	1,300	-	-	-	-	-	-	-	1,300	-	-	-	-
Placer	6,100	-	800	-	-	-	-	-	-	-	5,270	-	-
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-
Riverside	2,200	-	-	-	-	-	-	-	-	-	-	2,180	-
Sacramento	5,200	-	100	-	-	-	-	-	-	-	5,140	-	-
San Benito	3,400	-	1,900	780	-	740	-	-	-	-	-	-	-
San Bernardino	1,600	-	-	-	-	-	-	-	-	-	-	160	1,480
San Diego	-	-	-	-	-	-	-	-	-	-	-	-	-
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-
San Joaquin	147,200	20,200	18,500	-	4,020	-	-	-	-	101,630	2,780	-	20
San Luis Obispo	800	100	700	-	-	-	-	-	-	-	-	-	-
San Mateo	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Barbara	5,800	-	400	-	-	-	-	-	-	5,420	-	-	-
Santa Clara	3,500	-	600	2,750	-	-	-	100	-	20	-	-	-
Santa Cruz	100	-	-	-	-	-	-	-	70	-	-	-	-
Shasta	400	-	400	-	-	-	-	-	-	-	-	-	-
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-
Siskiyou	-	-	-	-	-	-	-	-	-	-	-	-	-
Solano	2,000	400	1,400	-	-	-	-	-	-	-	-	-	180
Sonoma	10,800	-	-	-	-	-	-	-	-	9,980	-	-	830
Stanislaus	121,700	41,200	16,100	-	-	6,070	720	9,140	-	46,080	1,210	-	1,140
Sutter	69,100	1,900	8,000	-	-	-	-	-	-	-	58,940	230	10
Tehama	12,900	1,900	6,900	-	3,620	-	-	-	-	-	440	-	-
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-
Tulare	30,400	5,900	16,100	-	-	-	-	-	-	-	-	8,380	-
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	30
Ventura	2,300	-	-	1,580	-	-	-	-	720	-	-	-	-
Yolo	25,300	3,000	4,100	-	-	60	-	-	-	1,280	16,350	520	-
Yuba	30,200	800	4,400	-	-	-	-	960	-	-	24,060	-	-
Other- not located	-	-	-	-	-	-	-	-	-	-	-	-	-
STATE TOTALS	1,240,000	250,100	111,700	6,430	7,740	31,710	1,200	27,370	2,090	334,780	314,680	88,230	63,590

**Table 35: Gross Food and Fiber Processing Residue (BDT/yr), 2017**

County Name	Total Food Processing	Almond Shell	Walnut Shell	Garlic & Onions	Olives	Tomatoes	Other Vegetables	Stone Fruit	Other Fruit	Winery	Rice Hull	Cotton Gin Waste	Meat Processing
Alameda	200	-	200	-	-	-	-	-	-	-	-	-	-
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-
Amador	200	-	200	-	-	-	-	-	-	-	-	-	-
Butte	124,600	24,700	11,500	-	-	-	-	3,600	-	-	84,800	-	-
Calaveras	1,200	-	200	-	-	-	-	-	-	1,000	-	-	-
Colusa	140,100	11,600	2,600	-	-	3,400	600	-	-	-	120,800	1,100	-
Contra Costa	900	-	900	-	-	-	-	-	-	-	-	-	-
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-
El Dorado	-	-	-	-	-	-	-	-	-	-	-	-	-
Fresno	125,700	31,900	3,500	-	-	6,100	-	-	-	21,100	1,700	25,400	36,000
Glenn	87,600	7,800	4,100	-	100	-	-	-	-	-	75,400	200	-
Humboldt	100	-	-	-	-	-	-	-	-	-	-	-	100
Imperial	1,200	-	-	-	-	-	-	-	-	-	-	1,200	-
Inyo	2,200	-	-	-	-	-	-	-	-	-	-	-	2,200
Kern	154,100	90,900	2,400	-	-	3,500	-	-	-	43,200	-	14,100	-
Kings	47,600	2,900	4,400	-	-	5,100	-	18,600	-	-	-	16,600	-
Lake	2,000	-	2,000	-	-	-	-	-	-	-	-	-	-
Lassen	-	-	-	-	-	-	-	-	-	-	-	-	-
Los Angeles	500	-	-	-	-	-	-	-	-	-	-	-	500
Madera	59,500	32,600	1,400	1,700	-	-	-	300	-	21,100	-	2,400	-
Marin	-	-	-	-	-	-	-	-	-	-	-	-	-
Mariposa	-	-	-	-	-	-	-	-	-	-	-	-	-
Mendocino	9,600	-	-	-	-	-	-	-	-	9,600	-	-	-
Merced	202,200	57,600	7,500	-	-	13,400	-	400	-	76,800	3,900	6,500	36,100
Modoc	-	-	-	-	-	-	-	-	-	-	-	-	-
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-
Monterey	22,300	-	200	-	-	-	-	-	-	22,100	-	-	-
Napa	18,200	-	100	-	-	-	-	-	-	18,100	-	-	-
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-
Orange	1,700	-	-	-	-	-	-	1,700	-	-	-	-	-
Placer	8,500	-	1,000	-	-	-	-	-	-	-	7,500	-	-
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-
Riverside	1,900	-	-	-	-	-	-	-	-	-	-	1,900	-
Sacramento	7,500	-	100	-	-	-	-	-	-	-	7,400	-	-
San Benito	4,400	-	2,500	1,000	-	900	-	-	-	-	-	-	-
San Bernardino	2,000	-	-	-	-	-	-	-	-	-	-	100	1,900
San Diego	-	-	-	-	-	-	-	-	-	-	-	-	-
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-
San Joaquin	191,200	30,100	24,400	-	5,700	-	-	-	-	127,000	4,000	-	-
San Luis Obispo	1,000	100	900	-	-	-	-	-	-	-	-	-	-
San Mateo	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Barbara	7,400	-	600	-	-	-	-	-	-	6,800	-	-	-
Santa Clara	4,400	-	800	3,500	-	-	-	100	-	-	-	-	-
Santa Cruz	100	-	-	-	-	-	-	-	100	-	-	-	-
Shasta	600	-	600	-	-	-	-	-	-	-	-	-	-
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-
Siskiyou	-	-	-	-	-	-	-	-	-	-	-	-	-
Solano	2,600	600	1,800	-	-	-	-	-	-	-	-	-	200
Sonoma	13,500	-	-	-	-	-	-	-	-	12,500	-	-	1,000
Stanislaus	164,200	61,400	21,300	-	-	7,700	900	12,200	-	57,600	1,700	-	1,400
Sutter	97,900	2,900	10,500	-	-	-	-	-	-	-	84,300	200	-
Tehama	17,700	2,900	9,100	-	5,100	-	-	-	-	-	600	-	-
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-
Tulare	37,400	8,700	21,300	-	-	-	-	-	-	-	-	7,400	-
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-
Ventura	3,000	-	-	2,000	-	-	-	-	1,000	-	-	-	-
Yolo	35,500	4,500	5,400	-	-	100	-	-	-	1,600	23,400	500	-
Yuba	42,700	1,200	5,800	-	-	-	-	-	1,300	-	34,400	-	-
Other- not located	-	-	-	-	-	-	-	-	-	-	-	-	-
STATE TOTALS	1,645,000	372,400	147,300	8,200	10,900	40,200	1,500	36,500	2,800	418,500	449,900	77,600	79,400

**Table 36: Technical Food and Fiber Processing Residue (BDT/yr), 2017**

County Name	Total Food Processing	Almond Shell	Walnut Shell	Garlic & Onions	Olives	Tomatoes	Other Vegetables	Stone Fruit	Other Fruit	Winery	Rice Hull	Cotton Gin Waste	Meat Processing
Alameda	160	-	160	-	-	-	-	-	-	-	-	-	-
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-
Amador	160	-	160	-	-	-	-	-	-	-	-	-	-
Butte	99,680	19,760	9,200	-	-	-	-	2,880	-	-	67,840	-	-
Calaveras	960	-	160	-	-	-	-	-	-	800	-	-	-
Colusa	112,080	9,280	2,080	-	-	2,720	480	-	-	-	96,640	880	-
Contra Costa	720	-	720	-	-	-	-	-	-	-	-	-	-
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-
El Dorado	-	-	-	-	-	-	-	-	-	-	-	-	-
Fresno	100,560	25,520	2,800	-	-	4,880	-	-	-	16,880	1,360	20,320	28,800
Glenn	70,080	6,240	3,280	-	80	-	-	-	-	-	60,320	160	-
Humboldt	80	-	-	-	-	-	-	-	-	-	-	-	80
Imperial	960	-	-	-	-	-	-	-	-	-	-	960	-
Inyo	1,760	-	-	-	-	-	-	-	-	-	-	-	1,760
Kern	123,280	72,720	1,920	-	-	2,800	-	-	-	34,560	-	11,280	-
Kings	38,080	2,320	3,520	-	-	4,080	-	14,880	-	-	-	-	13,280
Lake	1,600	-	1,600	-	-	-	-	-	-	-	-	-	-
Lassen	-	-	-	-	-	-	-	-	-	-	-	-	-
Los Angeles	400	-	-	-	-	-	-	-	-	-	-	-	400
Madera	47,600	26,080	1,120	1,360	-	-	-	240	-	16,880	-	1,920	-
Marin	-	-	-	-	-	-	-	-	-	-	-	-	-
Mariposa	-	-	-	-	-	-	-	-	-	-	-	-	-
Mendocino	7,680	-	-	-	-	-	-	-	-	7,680	-	-	-
Merced	161,760	46,080	6,000	-	-	10,720	-	320	-	61,440	3,120	5,200	28,880
Modoc	-	-	-	-	-	-	-	-	-	-	-	-	-
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-
Monterey	17,840	-	160	-	-	-	-	-	-	17,680	-	-	-
Napa	14,560	-	80	-	-	-	-	-	-	14,480	-	-	-
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-
Orange	1,360	-	-	-	-	-	-	1,360	-	-	-	-	-
Placer	6,800	-	800	-	-	-	-	-	-	-	6,000	-	-
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-
Riverside	1,520	-	-	-	-	-	-	-	-	-	-	1,520	-
Sacramento	6,000	-	80	-	-	-	-	-	-	-	5,920	-	-
San Benito	3,520	-	2,000	800	-	720	-	-	-	-	-	-	-
San Bernardino	1,600	-	-	-	-	-	-	-	-	-	-	80	1,520
San Diego	-	-	-	-	-	-	-	-	-	-	-	-	-
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-
San Joaquin	152,960	24,080	19,520	-	4,560	-	-	-	-	101,600	3,200	-	-
San Luis Obispo	800	80	720	-	-	-	-	-	-	-	-	-	-
San Mateo	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Barbara	5,920	-	480	-	-	-	-	-	-	5,440	-	-	-
Santa Clara	3,520	-	640	2,800	-	-	-	80	-	-	-	-	-
Santa Cruz	80	-	-	-	-	-	-	-	80	-	-	-	-
Shasta	480	-	480	-	-	-	-	-	-	-	-	-	-
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-
Siskiyou	-	-	-	-	-	-	-	-	-	-	-	-	-
Solano	2,080	480	1,440	-	-	-	-	-	-	-	-	-	160
Sonoma	10,800	-	-	-	-	-	-	-	-	10,000	-	-	800
Stanislaus	131,360	49,120	17,040	-	-	6,160	720	9,760	-	46,080	1,360	-	1,120
Sutter	78,320	2,320	8,400	-	-	-	-	-	-	-	67,440	160	-
Tehama	14,160	2,320	7,280	-	4,080	-	-	-	-	-	480	-	-
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-
Tulare	29,920	6,960	17,040	-	-	-	-	-	-	-	-	5,920	-
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-
Ventura	2,400	-	-	1,600	-	-	-	-	800	-	-	-	-
Yolo	28,400	3,600	4,320	-	-	80	-	-	-	1,280	18,720	400	-
Yuba	34,160	960	4,640	-	-	-	-	1,040	-	-	27,520	-	-
Other- not located	-	-	-	-	-	-	-	-	-	-	-	-	-
STATE TOTALS	1,316,000	297,920	117,840	6,560	8,720	32,160	1,200	29,200	2,240	334,800	359,920	62,080	63,520

**Table 37: Gross Food and Fiber Processing Residue (BDT/yr), 2020**

County Name	Total Food Processing	Almond Shell	Walnut Shell	Garlic & Onions	Olives	Tomatoes	Other Vegetables	Stone Fruit	Other Fruit	Winery	Rice Hull	Cotton Gin Waste	Meat Processing
Alameda	200	-	200	-	-	-	-	-	-	-	-	-	-
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-
Amador	200	-	200	-	-	-	-	-	-	-	-	-	-
Butte	131,900	26,600	11,800	-	-	-	-	3,700	-	-	89,800	-	-
Calaveras	1,200	-	200	-	-	-	-	-	-	1,000	-	-	-
Colusa	148,200	12,500	2,700	-	-	3,500	600	-	-	-	128,000	900	-
Contra Costa	900	-	900	-	-	-	-	-	-	-	-	-	-
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-
El Dorado	-	-	-	-	-	-	-	-	-	-	-	-	-
Fresno	124,800	34,300	3,600	-	-	6,200	-	-	-	21,100	1,800	21,800	36,000
Glenn	92,800	8,400	4,100	-	200	-	-	-	-	-	79,900	200	-
Humboldt	100	-	-	-	-	-	-	-	-	-	-	-	100
Imperial	1,000	-	-	-	-	-	-	-	-	-	-	1,000	-
Inyo	2,200	-	-	-	-	-	-	-	-	-	-	-	2,200
Kern	159,300	98,000	2,500	-	-	3,500	-	-	-	43,200	-	12,100	-
Kings	46,200	3,100	4,500	-	-	5,200	-	19,100	-	-	-	14,300	-
Lake	2,100	-	2,100	-	-	-	-	-	-	-	-	-	-
Lassen	-	-	-	-	-	-	-	-	-	-	-	-	-
Los Angeles	500	-	-	-	-	-	-	-	-	-	-	-	500
Madera	61,800	35,100	1,500	1,700	-	-	-	300	-	21,100	-	2,100	-
Marin	-	-	-	-	-	-	-	-	-	-	-	-	-
Mariposa	-	-	-	-	-	-	-	-	-	-	-	-	-
Mendocino	9,600	-	-	-	-	-	-	-	-	9,600	-	-	-
Merced	206,300	62,100	7,700	-	-	13,500	-	400	-	76,800	4,100	5,600	36,100
Modoc	-	-	-	-	-	-	-	-	-	-	-	-	-
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-
Monterey	22,300	-	200	-	-	-	-	-	-	22,100	-	-	-
Napa	18,200	-	100	-	-	-	-	-	-	18,100	-	-	-
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-
Orange	1,800	-	-	-	-	-	-	-	1,800	-	-	-	-
Placer	9,100	-	1,100	-	-	-	-	-	-	-	8,000	-	-
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-
Riverside	1,600	-	-	-	-	-	-	-	-	-	-	1,600	-
Sacramento	7,900	-	100	-	-	-	-	-	-	-	7,800	-	-
San Benito	4,400	-	2,500	1,000	-	900	-	-	-	-	-	-	-
San Bernardino	2,000	-	-	-	-	-	-	-	-	-	-	100	1,900
San Diego	-	-	-	-	-	-	-	-	-	-	-	-	-
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-
San Joaquin	194,600	32,400	25,000	-	6,000	-	-	-	-	127,000	4,200	-	-
San Luis Obispo	1,000	100	900	-	-	-	-	-	-	-	-	-	-
San Mateo	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Barbara	7,400	-	600	-	-	-	-	-	-	6,800	-	-	-
Santa Clara	4,500	-	800	3,600	-	-	-	100	-	-	-	-	-
Santa Cruz	100	-	-	-	-	-	-	-	100	-	-	-	-
Shasta	600	-	600	-	-	-	-	-	-	-	-	-	-
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-
Siskiyou	-	-	-	-	-	-	-	-	-	-	-	-	-
Solano	2,700	700	1,800	-	-	-	-	-	-	-	-	-	200
Sonoma	13,500	-	-	-	-	-	-	-	-	12,500	-	-	1,000
Stanislaus	170,000	66,100	21,800	-	-	7,800	900	12,600	-	57,600	1,800	-	1,400
Sutter	103,300	3,100	10,700	-	-	-	-	-	-	-	89,300	200	-
Tehama	18,500	3,100	9,300	-	5,400	-	-	-	-	-	700	-	-
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-
Tulare	37,500	9,400	21,800	-	-	-	-	-	-	-	-	6,300	-
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-
Ventura	3,100	-	-	2,100	-	-	-	-	1,000	-	-	-	-
Yolo	37,300	4,900	5,500	-	-	100	-	-	-	1,600	24,800	400	-
Yuba	44,900	1,300	5,900	-	-	-	-	1,300	-	-	36,400	-	-
Other- not located	-	-	-	-	-	-	-	-	-	-	-	-	-
STATE TOTALS	1,696,000	401,200	150,700	8,400	#####	40,700	1,500	37,500	2,900	418,500	476,600	66,600	79,400

**Table 38: Technical Food and Fiber Processing Residue (BDT/yr), 2020**

County Name	Total Food Processing	Almond Shell	Walnut Shell	Garlic & Onions	Olives	Tomatoes	Other Vegetables	Stone Fruit	Other Fruit	Winery	Rice Hull	Cotton Gin Waste	Meat Processing
Alameda	160	-	160	-	-	-	-	-	-	-	-	-	-
Alpine	-	-	-	-	-	-	-	-	-	-	-	-	-
Amador	160	-	160	-	-	-	-	-	-	-	-	-	-
Butte	105,520	21,280	9,440	-	-	-	-	2,960	-	-	71,840	-	-
Calaveras	960	-	160	-	-	-	-	-	-	800	-	-	-
Colusa	118,560	10,000	2,160	-	-	2,800	480	-	-	-	102,400	720	-
Contra Costa	720	-	720	-	-	-	-	-	-	-	-	-	-
Del Norte	-	-	-	-	-	-	-	-	-	-	-	-	-
El Dorado	-	-	-	-	-	-	-	-	-	-	-	-	-
Fresno	99,840	27,440	2,880	-	-	4,960	-	-	-	16,880	1,440	17,440	28,800
Glenn	74,240	6,720	3,280	-	160	-	-	-	-	-	63,920	160	-
Humboldt	80	-	-	-	-	-	-	-	-	-	-	-	80
Imperial	800	-	-	-	-	-	-	-	-	-	-	800	-
Inyo	1,760	-	-	-	-	-	-	-	-	-	-	-	1,760
Kern	127,440	78,400	2,000	-	-	2,800	-	-	-	34,560	-	9,680	-
Kings	36,960	2,480	3,600	-	-	4,160	-	15,280	-	-	-	11,440	-
Lake	1,680	-	1,680	-	-	-	-	-	-	-	-	-	-
Lassen	-	-	-	-	-	-	-	-	-	-	-	-	-
Los Angeles	400	-	-	-	-	-	-	-	-	-	-	-	400
Madera	49,440	28,080	1,200	1,360	-	-	-	240	-	16,880	-	1,680	-
Marin	-	-	-	-	-	-	-	-	-	-	-	-	-
Mariposa	-	-	-	-	-	-	-	-	-	-	-	-	-
Mendocino	7,680	-	-	-	-	-	-	-	-	7,680	-	-	-
Merced	165,040	49,680	6,160	-	-	10,800	-	320	-	61,440	3,280	4,480	28,880
Modoc	-	-	-	-	-	-	-	-	-	-	-	-	-
Mono	-	-	-	-	-	-	-	-	-	-	-	-	-
Monterey	17,840	-	160	-	-	-	-	-	-	17,680	-	-	-
Napa	14,560	-	80	-	-	-	-	-	-	14,480	-	-	-
Nevada	-	-	-	-	-	-	-	-	-	-	-	-	-
Orange	1,440	-	-	-	-	-	-	1,440	-	-	-	-	-
Placer	7,280	-	880	-	-	-	-	-	-	-	6,400	-	-
Plumas	-	-	-	-	-	-	-	-	-	-	-	-	-
Riverside	1,280	-	-	-	-	-	-	-	-	-	-	1,280	-
Sacramento	6,320	-	80	-	-	-	-	-	-	-	6,240	-	-
San Benito	3,520	-	2,000	800	-	720	-	-	-	-	-	-	-
San Bernardino	1,600	-	-	-	-	-	-	-	-	-	-	80	1,520
San Diego	-	-	-	-	-	-	-	-	-	-	-	-	-
San Francisco	-	-	-	-	-	-	-	-	-	-	-	-	-
San Joaquin	155,680	25,920	20,000	-	4,800	-	-	-	-	101,600	3,360	-	-
San Luis Obispo	800	80	720	-	-	-	-	-	-	-	-	-	-
San Mateo	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Barbara	5,920	-	480	-	-	-	-	-	-	5,440	-	-	-
Santa Clara	3,600	-	640	2,880	-	-	-	80	-	-	-	-	-
Santa Cruz	80	-	-	-	-	-	-	-	80	-	-	-	-
Shasta	480	-	480	-	-	-	-	-	-	-	-	-	-
Sierra	-	-	-	-	-	-	-	-	-	-	-	-	-
Siskiyou	-	-	-	-	-	-	-	-	-	-	-	-	-
Solano	2,160	560	1,440	-	-	-	-	-	-	-	-	-	160
Sonoma	10,800	-	-	-	-	-	-	-	-	10,000	-	-	800
Stanislaus	136,000	52,880	17,440	-	-	6,240	720	10,080	-	46,080	1,440	-	1,120
Sutter	82,640	2,480	8,560	-	-	-	-	-	-	-	71,440	160	-
Tehama	14,800	2,480	7,440	-	4,320	-	-	-	-	-	560	-	-
Trinity	-	-	-	-	-	-	-	-	-	-	-	-	-
Tulare	30,000	7,520	17,440	-	-	-	-	-	-	-	-	5,040	-
Tuolumne	-	-	-	-	-	-	-	-	-	-	-	-	-
Ventura	2,480	-	-	1,680	-	-	-	-	800	-	-	-	-
Yolo	29,840	3,920	4,400	-	-	80	-	-	-	1,280	19,840	320	-
Yuba	35,920	1,040	4,720	-	-	-	-	1,040	-	-	29,120	-	-
Other- not located	-	-	-	-	-	-	-	-	-	-	-	-	-
STATE TOTALS	1,356,000	320,960	120,560	6,720	9,280	32,560	1,200	30,000	2,320	334,800	381,280	53,280	63,520

## 2.1.5 Animal Manures

The agricultural animal population in the state is about 61 million including 55 million poultry (broiler and layer chickens and turkeys) [Table 39]. Total cattle population exceeds 5.5 million, with 1.79 million milking cows, 700,000 beef cows, and 3 million other cows. Total manure production from animals is more than 10 million BDT/y, with 8.4 million BDT/y from cattle and nearly half of that from milking cows in dairies. Poultry contributes about 644,000 BDT/y or about 6% of agricultural animal manure. Distribution of cattle manure within the state is shown in Figure 5.

**Table 39: Animal Populations in California and Manure Production Data**

Animal type	Number of Animals in California Inventory	Average Size (lbs/animal)	Total Wet Manure (lb/animal-day)	Moisture Content (% wb)	Total Solids (TS)			Volatile Solids (VS)	
					(lb/animal-day)	(lb/animal-year)	Statewide (BDT/y)	(lb/animal-day)	(lb/animal-year)
Dairy Cows - Lactating	1,790,000	1,000	86	86.0	12.0	4,380	3,920,100	10.00	3,650
Beef Cows	700,000	800	46	85.3	6.8	2,482	868,700	5.76	2,102
Other Cattle (cow replacements & heifers)	1,115,556	1,000	86	86.0	12.0	4,380	2,443,067	10.00	3,650
Other Cattle (bulls, steers)	753,704	800	46	85.3	6.8	2,482	935,346	5.76	2,102
Other Cattle (veal calves)	1,140,741	200	12	91.6	1.0	380	216,513	0.46	168
Swine -growing/finishing	155,000	135	11	86.9	1.5	542	42,007	1.15	419
Poultry (Layer Chickens)	19,313,000	4	0	75.0	0.1	23	225,576	0.05	18
Poultry (Broiler Chickens)	30,000,000	2	0	74.1	0.0	16	240,900	0.03	12
Poultry (Turkeys)	5,415,245	15	1	74.5	0.2	66	177,891	0.14	50
Sheep, lambs, goats	730,000	60	2	72.5	0.7	241	87,929	0.55	201
Horses	360,000	1,000	51	70.6	15.0	5,475	985,500	10.00	3,650
Total	61,473,245						10,140,000		

Manure production was estimated from animal populations and animal-specific production rates. Average animal sizes, daily wet manure production rates, moisture contents, and volatile solids production rates are from standard values published by ASAE<sup>6</sup> as listed in Table 39. Gross biomass is calculated as total solids derived from the daily wet manure production and moisture content (wet basis). Values shown in Table 39 for other cattle are based on three categories reported by CDFA: cow replacements and heifers, bulls and steers, and veal calves. The values shown in the table are population weighted means over the three classes.

Resource quantities for 2007 to 2020 were projected from base year data using escalation rates for each animal type. Beef cattle populations were extrapolated using the linear decline rate computed for the period 1994-2003. For lack of better data, dairy cattle populations were escalated using human population growth rates by county discussed later under municipal wastes (see Tables 54-56). Cattle populations by county for 2007 are listed in Table 40. County distributions for swine and sheep, lambs, and goats were obtained from the National Agricultural Statistics Service.

<sup>6</sup> ASAE D384.1, American Society of Agricultural Engineers, St. Joseph, Michigan.

**Figure 5: Total Cattle Manure (gross BDT/yr) in California, 2007**



**Table 40: Cattle Populations in California by County, 2006**

County	Beef Cow	Dairy Cow	Other Cattle	Total Cattle
Alameda	8,000	0	7,000	15,000
Alpine	2,000	0	0	2,000
Amador	10,000	0	9,000	19,000
Butte	8,000	400	9,600	18,000
Calaveras	12,000	0	9,000	21,000
Colusa	11,000	0	5,000	16,000
Contra Costa	8,000	125	7,875	16,000
Del Norte	1,000	3,600	9,400	14,000
El Dorado	5,000	0	3,000	8,000
Fresno	19,000	109,500	367,500	496,000
Glenn	17,000	16,600	26,400	60,000
Humboldt	20,000	14,200	19,800	54,000
Imperial	1,000	5,500	500,500	507,000
Inyo	12,000	0	4,000	16,000
Kern	31,000	154,500	134,500	320,000
Kings	6,000	166,000	108,000	280,000
Lake	4,000	0	2,000	6,000
Lassen	26,000	0	18,000	44,000
Los Angeles	1,000	2,930	-930	3,000
Madera	14,000	68,000	76,000	158,000
Marin	9,000	11,500	10,500	31,000
Mariposa	12,000	0	10,000	22,000
Mendocino	11,000	1,400	4,600	17,000
Merced	23,000	245,000	242,000	510,000
Modoc	45,000	0	23,000	68,000
Mono	4,000	0	2,000	6,000
Monterey	24,000	1,400	39,600	65,000
Napa	4,000	0	3,000	7,000
Nevada	3,000	0	2,000	5,000
Orange	1,000	0	0	1,000
Placer	7,000	700	7,300	15,000
Plumas	6,000	0	7,000	13,000
Riverside	4,000	62,500	78,500	145,000
Sacramento	15,000	15,800	28,200	59,000
San Benito	19,000	700	18,300	38,000
San Bernardino	3,000	103,000	131,000	237,000
San Diego	5,000	4,100	12,900	22,000
San Francisco	0	0	0	0
San Joaquin	14,000	104,000	122,000	240,000
San Luis Obispo	35,000	125	41,875	77,000
San Mateo	1,000	0	2,000	3,000
Santa Barbara	17,000	1,470	18,530	37,000
Santa Clara	11,000	125	7,875	19,000
Santa Cruz	1,000	125	875	2,000
Shasta	19,000	0	19,000	38,000
Sierra	3,000	0	4,000	7,000
Siskiyou	34,000	1,400	22,600	58,000
Solano	18,000	4,000	26,000	48,000
Sonoma	11,000	30,300	29,700	71,000
Stanislaus	34,000	182,000	225,000	441,000
Sutter	7,000	500	3,500	11,000
Tehama	25,000	4,700	29,300	59,000
Trinity	3,000	0	1,000	4,000
Tulare	25,000	468,500	486,500	980,000
Tuolumne	10,000	0	4,000	14,000
Ventura	5,000	0	3,000	8,000
Yolo	8,000	2,300	8,700	19,000
Yuba	8,000	3,000	19,000	30,000
Sum of Other	0	0	0	0
STATE TOTALS	700,000	1,790,000	3,010,000	5,500,000

Technical availability factors for manure from each type of animal are listed in Table 41. The availability fractions are in this analysis held constant over time. The estimates are largely based on whether the animals are produced under confinement, with greater availability from confined animal operations. Beef cattle are produced both in confined animal feeding operations (CAFO) and on the range. Manure from range animals is not likely to be collected. Much of the manure from milking cows and swine is produced under confined conditions and current manure handling systems make much of this available for use. Poultry are also largely produced in confinement although much of the manure now is composted. Only small fractions of horse and sheep manure are expected to be available for use, manure at race tracks being a possible exception. Estimated gross and technical biomass quantities for manure by animal type and by county are listed in Tables 42 - 49 for years 2007, 2010, 2017, and 2020.

**Table 41: Technical Availability Factors for Manure by Animal Type**

Biomass Type	(--)
Beef Cow Manure	0.25
Milk Cow Manure	0.5
Other Cattle Manure	0.25
Swine	0.5
Poultry Layer Chickens	0.5
Poultry Broiler Chickens	0.5
Poultry Turkeys	0.5
Sheep and Lambs	0.05
Horses and other Equine	0.05

**Table 42: Gross Animal Manures (BDT/yr), 2007**

County Name	Total Animal Manure	Total Cattle Manure	Beef Cow Manure	Milk Cow Manure	Other Cattle Manure	Swine	Poultry Layer Chickens	Poultry Broiler Chickens	Poultry Turkeys	Sheep, Lambs, Goats	Horses, other Equine
Alameda	18,300	18,300	9,900	-	8,400	-	-	-	-	-	-
Alpine	2,500	2,500	2,500	-	-	-	-	-	-	-	-
Amador	23,200	23,200	12,400	-	10,700	-	-	-	-	-	-
Butte	23,200	22,300	9,900	900	11,500	400	-	-	-	500	-
Calaveras	25,900	25,600	14,900	-	10,700	-	-	-	-	300	-
Colusa	20,400	19,600	13,700	-	6,000	-	-	-	-	800	-
Contra Costa	19,600	19,600	9,900	300	9,400	-	-	-	-	-	-
Del Norte	20,400	20,400	1,200	7,900	11,200	-	-	-	-	-	-
EI Dorado	10,100	9,800	6,200	-	3,600	-	-	-	-	300	-
Fresno	823,800	702,300	23,600	239,800	438,900	1,600	11,900	71,900	31,500	4,600	-
Glenn	90,000	89,000	21,100	36,400	31,500	200	-	-	-	800	-
Humboldt	80,000	79,600	24,800	31,100	23,600	-	-	-	-	400	-
Imperial	627,300	611,000	1,200	12,000	597,800	-	-	-	-	16,300	-
Inyo	19,700	19,700	14,900	-	4,800	-	-	-	-	-	-
Kern	552,600	537,500	38,500	338,400	160,600	400	-	-	-	14,700	-
Kings	530,500	500,000	7,400	363,500	129,000	200	-	-	30,300	-	-
Lake	7,600	7,400	5,000	-	2,400	200	-	-	-	-	-
Lassen	54,300	53,800	32,300	-	21,500	-	-	-	-	500	-
Los Angeles	7,100	6,500	1,200	6,400	(1,100)	100	100	-	-	400	-
Madera	280,800	257,100	17,400	148,900	90,800	-	-	4,800	17,400	1,500	-
Marin	50,200	48,900	11,200	25,200	12,500	-	-	-	-	1,300	-
Mariposa	26,800	26,800	14,900	-	11,900	-	-	-	-	-	-
Mendocino	23,500	22,200	13,700	3,100	5,500	200	-	-	-	1,100	-
Merced	938,200	854,100	28,500	536,600	289,000	-	44,200	-	38,500	1,400	-
Modoc	84,100	83,300	55,800	-	27,500	-	-	-	-	800	-
Mono	7,400	7,400	5,000	-	2,400	-	-	-	-	-	-
Monterey	80,500	80,100	29,800	3,100	47,300	100	100	-	-	200	-
Napa	8,800	8,500	5,000	-	3,600	-	-	-	-	300	-
Nevada	6,400	6,100	3,700	-	2,400	-	-	-	-	300	-
Orange	1,200	1,200	1,200	-	-	-	-	-	-	-	-
Placer	19,700	18,900	8,700	1,500	8,700	200	-	-	-	600	-
Plumas	15,800	15,800	7,400	-	8,400	-	-	-	-	-	-
Riverside	296,200	235,600	5,000	136,900	93,800	1,200	53,900	-	-	5,500	-
Sacramento	91,600	86,900	18,600	34,600	33,700	500	-	3,600	-	600	-
San Benito	47,700	47,000	23,600	1,500	21,900	200	-	-	-	500	-
San Bernardino	412,500	385,700	3,700	225,600	156,500	2,600	21,300	1,800	-	1,100	-
San Diego	60,200	30,600	6,200	9,000	15,400	400	27,100	1,900	-	200	-
San Francisco	-	-	-	-	-	-	-	-	-	-	-
San Joaquin	418,200	390,800	17,400	227,800	145,700	400	17,600	7,200	-	2,200	-
San Luis Obispo	97,000	93,700	43,400	300	50,000	-	1,300	-	-	2,000	-
San Mateo	3,600	3,600	1,200	-	2,400	-	-	-	-	-	-
Santa Barbara	47,600	46,400	21,100	3,200	22,100	200	-	-	-	1,000	-
Santa Clara	23,500	23,300	13,700	300	9,400	-	-	-	-	200	-
Santa Cruz	2,600	2,600	1,200	300	1,000	-	-	-	-	-	-
Shasta	46,600	46,300	23,600	-	22,700	-	-	-	-	300	-
Sierra	8,500	8,500	3,700	-	4,800	-	-	-	-	-	-
Siskiyou	72,700	72,300	42,200	3,100	27,000	-	-	-	-	400	-
Solano	69,500	62,200	22,300	8,800	31,100	-	100	100	-	7,100	-
Sonoma	130,200	115,500	13,700	66,400	35,500	400	11,200	-	-	3,100	-
Stanislaus	753,700	709,500	42,200	398,600	268,700	-	23,500	-	20,200	500	-
Sutter	15,400	14,000	8,700	1,100	4,200	-	-	-	-	1,400	-
Tehama	77,400	76,300	31,000	10,300	35,000	200	-	-	-	900	-
Trinity	4,900	4,900	3,700	-	1,200	-	-	-	-	-	-
Tulare	1,667,900	1,638,100	31,000	1,026,000	581,000	-	-	14,900	7,100	7,800	-
Tuolumne	36,600	17,200	12,400	-	4,800	-	-	-	19,400	-	-
Ventura	9,800	9,800	6,200	-	3,600	-	-	-	-	-	-
Yolo	27,600	25,400	9,900	5,000	10,400	200	-	-	-	2,000	-
Yuba	39,200	39,200	9,900	6,600	22,700	-	-	-	-	-	-
Other- not located	1,183,200	-	-	-	-	32,100	13,400	134,700	13,500	4,000	985,500
STATE TOTALS	10,150,000	8,380,000	870,000	3,920,000	3,600,000	42,000	226,000	241,000	178,000	88,000	986,000

**Table 43: Technical Animal Manures (BDT/yr), 2007**

County Name	Total Animal Manure	Total Cattle Manure	Beef Cow Manure	Milk Cow Manure	Other Cattle Manure	Swine	Poultry Layer Chickens	Poultry Broiler Chickens	Poultry Turkeys	Sheep, Lambs, Goats	Horses, other Equine
Alameda	4,600	4,600	2,500	-	2,100	-	-	-	-	-	-
Alpine	600	600	600	-	-	-	-	-	-	-	-
Amador	5,800	5,800	3,100	-	2,700	-	-	-	-	-	-
Butte	6,100	5,900	2,500	500	2,900	200	-	-	-	-	-
Calaveras	6,400	6,400	3,700	-	2,700	-	-	-	-	-	-
Colusa	4,900	4,900	3,400	-	1,500	-	-	-	-	-	-
Contra Costa	5,100	5,100	2,500	200	2,400	-	-	-	-	-	-
Del Norte	7,100	7,100	300	4,000	2,800	-	-	-	-	-	-
El Dorado	2,500	2,500	1,600	-	900	-	-	-	-	-	-
Fresno	294,300	235,500	5,900	119,900	109,700	800	6,000	36,000	15,800	200	-
Glenn	31,500	31,400	5,300	18,200	7,900	100	-	-	-	-	-
Humboldt	27,700	27,700	6,200	15,600	5,900	-	-	-	-	-	-
Imperial	156,600	155,800	300	6,000	149,500	-	-	-	-	800	-
Inyo	4,900	4,900	3,700	-	1,200	-	-	-	-	-	-
Kern	219,900	219,000	9,600	169,200	40,200	200	-	-	-	700	-
Kings	231,300	216,000	1,900	181,800	32,300	100	-	-	15,200	-	-
Lake	2,000	1,900	1,300	-	600	100	-	-	-	-	-
Lassen	13,500	13,500	8,100	-	5,400	-	-	-	-	-	-
Los Angeles	3,400	3,200	300	3,200	(300)	100	100	-	-	-	-
Madera	112,800	101,600	4,400	74,500	22,700	-	-	2,400	8,700	100	-
Marin	18,600	18,500	2,800	12,600	3,100	-	-	-	-	100	-
Mariposa	6,700	6,700	3,700	-	3,000	-	-	-	-	-	-
Mendocino	6,600	6,400	3,400	1,600	1,400	100	-	-	-	100	-
Merced	389,200	347,700	7,100	268,300	72,300	-	22,100	-	19,300	100	-
Modoc	20,900	20,900	14,000	-	6,900	-	-	-	-	-	-
Mono	1,900	1,900	1,300	-	600	-	-	-	-	-	-
Monterey	21,100	20,900	7,500	1,600	11,800	100	100	-	-	-	-
Napa	2,200	2,200	1,300	-	900	-	-	-	-	-	-
Nevada	1,500	1,500	900	-	600	-	-	-	-	-	-
Orange	300	300	300	-	-	-	-	-	-	-	-
Placer	5,300	5,200	2,200	800	2,200	100	-	-	-	-	-
Plumas	4,000	4,000	1,900	-	2,100	-	-	-	-	-	-
Riverside	121,200	93,300	1,300	68,500	23,500	600	27,000	-	-	300	-
Sacramento	32,500	30,400	4,700	17,300	8,400	300	-	1,800	-	-	-
San Benito	12,300	12,200	5,900	800	5,500	100	-	-	-	-	-
San Bernardino	165,800	152,800	900	112,800	39,100	1,300	10,700	900	-	100	-
San Diego	24,800	10,000	1,600	4,500	3,900	200	13,600	1,000	-	-	-
San Francisco	-	-	-	-	-	-	-	-	-	-	-
San Joaquin	167,400	154,700	4,400	113,900	36,400	200	8,800	3,600	-	100	-
San Luis Obispo	24,400	23,600	10,900	200	12,500	-	700	-	-	100	-
San Mateo	900	900	300	-	600	-	-	-	-	-	-
Santa Barbara	12,600	12,400	5,300	1,600	5,500	100	-	-	-	100	-
Santa Clara	6,000	6,000	3,400	200	2,400	-	-	-	-	-	-
Santa Cruz	800	800	300	200	300	-	-	-	-	-	-
Shasta	11,600	11,600	5,900	-	5,700	-	-	-	-	-	-
Sierra	2,100	2,100	900	-	1,200	-	-	-	-	-	-
Siskiyou	19,000	19,000	10,600	1,600	6,800	-	-	-	-	-	-
Solano	18,400	17,800	5,600	4,400	7,800	-	100	100	-	400	-
Sonoma	51,500	45,500	3,400	33,200	8,900	200	5,600	-	-	200	-
Stanislaus	299,000	277,100	10,600	199,300	67,200	-	11,800	-	10,100	-	-
Sutter	4,000	3,900	2,200	600	1,100	-	-	-	-	100	-
Tehama	21,900	21,800	7,800	5,200	8,800	100	-	-	-	-	-
Trinity	1,200	1,200	900	-	300	-	-	-	-	-	-
Tulare	677,600	666,100	7,800	513,000	145,300	-	-	7,500	3,600	400	-
Tuolumne	14,000	4,300	3,100	-	1,200	-	-	-	9,700	-	-
Ventura	2,500	2,500	1,600	-	900	-	-	-	-	-	-
Yolo	7,800	7,600	2,500	2,500	2,600	100	-	-	-	100	-
Yuba	11,500	11,500	2,500	3,300	5,700	-	-	-	-	-	-
Other- not located	146,500	-	-	-	-	16,100	6,700	67,400	6,800	200	49,300
STATE TOTALS	3,475,000	3,077,500	217,500	1,960,000	900,000	21,000	113,000	120,500	89,000	4,400	49,300

**Table 44: Gross Animal Manures (BDT/yr), 2010**

County Name	Total Animal Manure	Total Cattle Manure	Beef Cow Manure	Milk Cow Manure	Other Cattle Manure	Swine	Poultry Layer Chickens	Poultry Broiler Chickens	Poultry Turkeys	Sheep, Lambs, Goats	Horses, other Equine
Alameda	18,600	18,600	10,100	-	8,500	-	-	-	-	-	-
Alpine	2,700	2,700	2,700	-	-	-	-	-	-	-	-
Amador	24,600	24,600	13,200	-	11,400	-	-	-	-	-	-
Butte	24,900	23,900	10,600	1,000	12,300	430	-	-	-	530	-
Calaveras	27,400	27,100	15,800	-	11,300	-	-	-	-	320	-
Colusa	23,200	22,300	15,500	-	6,800	-	-	-	-	910	-
Contra Costa	20,700	20,700	10,500	300	9,900	-	-	-	-	-	-
Del Norte	21,600	21,600	1,300	8,400	11,900	-	-	-	-	-	-
El Dorado	11,000	10,700	6,800	-	3,900	-	-	-	-	330	-
Fresno	916,900	781,700	26,300	266,900	488,500	1,780	13,240	80,020	35,060	5,120	-
Glenn	98,300	97,200	23,000	39,800	34,400	220	-	-	-	870	-
Humboldt	81,600	81,200	25,300	31,800	24,100	-	-	-	-	410	-
Imperial	736,200	717,100	1,400	14,100	701,600	-	-	-	-	19,130	-
Inyo	20,400	20,400	15,400	-	5,000	-	-	-	-	-	-
Kern	635,600	618,200	44,300	389,200	184,700	460	-	-	-	16,910	-
Kings	601,500	566,900	8,400	412,200	146,300	230	-	-	34,360	-	-
Lake	8,000	7,800	5,300	-	2,500	210	-	-	-	-	-
Lassen	58,100	57,600	34,600	-	23,000	-	-	-	-	540	-
Los Angeles	7,300	6,700	1,200	6,600	(1,100)	100	100	-	-	410	-
Madera	323,400	296,100	20,000	171,500	104,600	-	-	5,530	20,040	1,730	-
Marin	50,600	49,300	11,300	25,400	12,600	-	-	-	-	1,310	-
Mariposa	28,300	28,300	15,700	-	12,600	-	-	-	-	-	-
Mendocino	24,400	23,000	14,100	3,200	5,700	210	-	-	-	1,140	-
Merced	1,064,400	969,000	32,300	608,800	327,900	-	50,140	-	43,680	1,590	-
Modoc	92,500	91,600	61,400	-	30,200	-	-	-	-	880	-
Mono	8,100	8,100	5,500	-	2,600	-	-	-	-	-	-
Monterey	82,500	82,100	30,500	3,200	48,400	100	100	-	-	200	-
Napa	9,600	9,300	5,400	-	3,900	-	-	-	-	320	-
Nevada	6,600	6,300	3,800	-	2,500	-	-	-	-	310	-
Orange	1,300	1,300	1,300	-	-	-	-	-	-	-	-
Placer	22,200	21,300	9,800	1,700	9,800	230	-	-	-	680	-
Plumas	16,100	16,100	7,500	-	8,600	-	-	-	-	-	-
Riverside	351,300	279,400	5,900	162,300	111,200	1,420	63,910	-	-	6,520	-
Sacramento	97,300	92,300	19,800	36,700	35,800	530	-	3,820	-	640	-
San Benito	53,400	52,600	26,400	1,700	24,500	220	-	-	-	560	-
San Bernardino	460,500	430,600	4,100	251,800	174,700	2,900	23,780	2,010	-	1,230	-
San Diego	63,400	32,200	6,500	9,500	16,200	420	28,530	2,000	-	210	-
San Francisco	-	-	-	-	-	-	-	-	-	-	-
San Joaquin	473,200	442,200	19,700	257,700	164,800	450	19,910	8,150	-	2,490	-
San Luis Obispo	100,100	96,700	44,800	300	51,600	-	1,340	-	-	2,060	-
San Mateo	3,700	3,700	1,200	-	2,500	-	-	-	-	-	-
Santa Barbara	49,500	48,200	21,900	3,300	23,000	210	-	-	-	1,040	-
Santa Clara	24,800	24,600	14,400	300	9,900	-	-	-	-	210	-
Santa Cruz	2,500	2,500	1,200	300	1,000	-	-	-	-	-	-
Shasta	49,700	49,400	25,200	-	24,200	-	-	-	-	320	-
Sierra	8,700	8,700	3,800	-	4,900	-	-	-	-	-	-
Siskiyou	74,500	74,100	43,200	3,200	27,700	-	-	-	-	410	-
Solano	72,900	65,200	23,400	9,200	32,600	-	100	100	-	7,450	-
Sonoma	135,100	119,900	14,200	68,900	36,800	410	11,620	-	-	3,210	-
Stanislaus	834,800	785,800	46,700	441,500	297,600	-	26,030	-	22,370	550	-
Sutter	17,700	16,100	10,000	1,300	4,800	-	-	-	-	1,610	-
Tehama	83,600	82,400	33,500	11,100	37,800	220	-	-	-	970	-
Trinity	5,300	5,300	4,000	-	1,300	-	-	-	-	-	-
Tulare	1,891,400	1,857,600	35,200	1,163,500	658,900	-	-	16,900	8,050	8,850	-
Tuolumne	37,300	17,500	12,600	-	4,900	-	-	-	19,760	-	-
Ventura	10,300	10,300	6,500	-	3,800	-	-	-	-	-	-
Yolo	30,200	27,800	10,900	5,500	11,400	220	-	-	-	2,200	-
Yuba	46,800	46,800	11,800	7,900	27,100	-	-	-	-	-	-
Other- not located	1,261,000	-	-	-	-	34,200	14,280	143,530	14,380	4,260	1,050,000
STATE TOTALS	11,300,000	9,400,000	940,000	4,420,000	4,040,000	45,000	253,000	262,000	198,000	98,000	1,050,000

**Table 45: Technical Animal Manures (BDT/yr), 2010**

County Name	Total Animal Manure	Total Cattle Manure	Beef Cow Manure	Milk Cow Manure	Other Cattle Manure	Swine	Poultry Layer Chickens	Poultry Broiler Chickens	Poultry Turkeys	Sheep, Lambs, Goats	Horses, other Equine
Alameda	5,000	4,600	2,500	-	2,100	-	-	-	-	-	-
Alpine	1,000	700	700	-	-	-	-	-	-	-	-
Amador	6,000	6,200	3,300	-	2,900	-	-	-	-	-	-
Butte	7,000	6,300	2,700	500	3,100	220	-	-	-	30	-
Calaveras	7,000	6,800	4,000	-	2,800	-	-	-	-	20	-
Colusa	6,000	5,600	3,900	-	1,700	-	-	-	-	50	-
Contra Costa	5,000	5,300	2,600	200	2,500	-	-	-	-	-	-
Del Norte	8,000	7,500	300	4,200	3,000	-	-	-	-	-	-
El Dorado	3,000	2,700	1,700	-	1,000	-	-	-	-	20	-
Fresno	328,000	262,200	6,600	133,500	122,100	890	6,620	40,010	17,530	260	-
Glenn	34,000	34,300	5,800	19,900	8,600	110	-	-	-	40	-
Humboldt	28,000	28,200	6,300	15,900	6,000	-	-	-	-	20	-
Imperial	184,000	182,900	400	7,100	175,400	-	-	-	-	960	-
Inyo	5,000	5,200	3,900	-	1,300	-	-	-	-	-	-
Kern	253,000	251,900	11,100	194,600	46,200	230	-	-	-	850	-
Kings	262,000	244,800	2,100	206,100	36,600	120	-	-	17,180	-	-
Lake	2,000	1,900	1,300	-	600	110	-	-	-	-	-
Lassen	15,000	14,500	8,700	-	5,800	-	-	-	-	30	-
Los Angeles	3,000	3,300	300	3,300	(300)	50	50	-	-	20	-
Madera	130,000	117,000	5,000	85,800	26,200	-	-	2,770	10,020	90	-
Marin	19,000	18,700	2,800	12,700	3,200	-	-	-	-	70	-
Mariposa	7,000	7,100	3,900	-	3,200	-	-	-	-	-	-
Mendocino	7,000	6,500	3,500	1,600	1,400	110	-	-	-	60	-
Merced	441,000	394,500	8,100	304,400	82,000	-	25,070	-	21,840	80	-
Modoc	23,000	23,000	15,400	-	7,600	-	-	-	-	40	-
Mono	2,000	2,100	1,400	-	700	-	-	-	-	-	-
Monterey	21,000	21,300	7,600	1,600	12,100	50	50	-	-	10	-
Napa	2,000	2,400	1,400	-	1,000	-	-	-	-	20	-
Nevada	2,000	1,600	1,000	-	600	-	-	-	-	20	-
Orange	-	300	300	-	-	-	-	-	-	-	-
Placer	6,000	5,900	2,500	900	2,500	120	-	-	-	30	-
Plumas	4,000	4,100	1,900	-	2,200	-	-	-	-	-	-
Riverside	144,000	110,500	1,500	81,200	27,800	710	31,960	-	-	330	-
Sacramento	35,000	32,400	5,000	18,400	9,000	270	-	1,910	-	30	-
San Benito	14,000	13,600	6,600	900	6,100	110	-	-	-	30	-
San Bernardino	185,000	170,600	1,000	125,900	43,700	1,450	11,890	1,010	-	60	-
San Diego	26,000	10,500	1,600	4,800	4,100	210	14,270	1,000	-	10	-
San Francisco	-	-	-	-	-	-	-	-	-	-	-
San Joaquin	189,000	175,000	4,900	128,900	41,200	230	9,960	4,080	-	120	-
San Luis Obispo	25,000	24,300	11,200	200	12,900	-	670	-	-	100	-
San Mateo	1,000	900	300	-	600	-	-	-	-	-	-
Santa Barbara	13,000	13,000	5,500	1,700	5,800	110	-	-	-	50	-
Santa Clara	6,000	6,300	3,600	200	2,500	-	-	-	-	10	-
Santa Cruz	1,000	800	300	200	300	-	-	-	-	-	-
Shasta	12,000	12,400	6,300	-	6,100	-	-	-	-	20	-
Sierra	2,000	2,200	1,000	-	1,200	-	-	-	-	-	-
Siskiyou	19,000	19,300	10,800	1,600	6,900	-	-	-	-	20	-
Solano	19,000	18,700	5,900	4,600	8,200	-	50	50	-	370	-
Sonoma	53,000	47,300	3,600	34,500	9,200	210	5,810	-	-	160	-
Stanislaus	331,000	306,900	11,700	220,800	74,400	-	13,020	-	11,190	30	-
Sutter	4,000	4,400	2,500	700	1,200	-	-	-	-	80	-
Tehama	24,000	23,500	8,400	5,600	9,500	110	-	-	-	50	-
Trinity	1,000	1,300	1,000	-	300	-	-	-	-	-	-
Tulare	768,000	755,300	8,800	581,800	164,700	-	-	8,450	4,030	440	-
Tuolumne	14,000	4,400	3,200	-	1,200	-	-	-	9,880	-	-
Ventura	3,000	2,600	1,600	-	1,000	-	-	-	-	-	-
Yolo	9,000	8,400	2,700	2,800	2,900	110	-	-	-	110	-
Yuba	14,000	13,800	3,000	4,000	6,800	-	-	-	-	-	-
Other- not located	156,000	-	-	-	-	17,100	7,140	71,770	7,190	210	52,500
STATE TOTALS	3,890,000	3,457,800	235,000	2,211,100	1,011,700	22,630	126,560	131,050	98,860	4,950	52,500

**Table 46: Gross Animal Manures (BDT/yr), 2017**

County Name	Total Animal Manure	Total Cattle Manure	Beef Cow Manure	Milk Cow Manure	Other Cattle Manure	Swine	Poultry Layer Chickens	Poultry Broiler Chickens	Poultry Turkeys	Sheep, Lambs, Goats	Horses, other Equine
Alameda	19,600	19,600	10,600	-	9,000	-	-	-	-	-	-
Alpine	2,800	2,800	2,800	-	-	-	-	-	-	-	-
Amador	27,200	27,300	14,600	-	12,600	-	-	-	-	-	-
Butte	28,200	27,100	12,000	1,100	14,000	500	-	-	-	600	-
Calaveras	30,300	29,900	17,400	-	12,500	-	-	-	-	400	-
Colusa	25,700	24,700	17,200	-	7,500	-	-	-	-	1,000	-
Contra Costa	22,300	22,400	11,300	300	10,700	-	-	-	-	-	-
Del Norte	23,800	23,900	1,400	9,300	13,100	-	-	-	-	-	-
EI Dorado	11,900	11,500	7,300	-	4,200	-	-	-	-	400	-
Fresno	1,013,900	864,300	29,000	295,100	540,200	2,000	14,600	88,500	38,800	5,700	-
Glenn	110,900	109,700	26,000	44,900	38,800	200	-	-	-	1,000	-
Humboldt	84,600	84,300	26,300	32,900	25,000	-	-	-	-	400	-
Imperial	805,800	785,000	1,500	15,400	768,000	-	-	-	-	20,900	-
Inyo	21,400	21,400	16,200	-	5,200	-	-	-	-	-	-
Kern	698,000	678,900	48,600	427,400	202,900	500	-	-	-	18,600	-
Kings	671,600	633,000	9,400	460,200	163,300	300	-	-	38,400	-	-
Lake	8,800	8,600	5,800	-	2,800	200	-	-	-	-	-
Lassen	61,100	60,500	36,300	-	24,200	-	-	-	-	600	-
Los Angeles	7,500	6,900	1,300	6,800	(1,200)	100	100	-	-	400	-
Madera	369,900	338,800	22,900	196,200	119,600	-	-	6,300	22,900	2,000	-
Marin	50,800	49,500	11,300	25,500	12,700	-	-	-	-	1,300	-
Mariposa	30,600	30,700	17,000	-	13,600	-	-	-	-	-	-
Mendocino	25,800	24,400	15,000	3,400	6,000	200	-	-	-	1,200	-
Merced	1,206,200	1,098,100	36,600	689,900	371,600	-	56,800	-	49,500	1,800	-
Modoc	106,000	105,000	70,300	-	34,700	-	-	-	-	1,000	-
Mono	9,000	9,000	6,100	-	2,900	-	-	-	-	-	-
Monterey	87,900	87,300	32,500	3,400	51,600	100	100	-	-	200	-
Napa	10,300	9,900	5,800	-	4,200	-	-	-	-	300	-
Nevada	7,100	6,800	4,100	-	2,700	-	-	-	-	300	-
Orange	1,300	1,300	1,300	-	-	-	-	-	-	-	-
Placer	24,400	23,400	10,800	1,900	10,800	200	-	-	-	700	-
Plumas	16,800	16,800	7,900	-	8,900	-	-	-	-	-	-
Riverside	390,100	310,200	6,600	180,200	123,500	1,600	71,000	-	-	7,200	-
Sacramento	102,300	97,000	20,800	38,600	37,600	600	-	4,000	-	700	-
San Benito	63,500	62,500	31,400	2,000	29,100	300	-	-	-	700	-
San Bernardino	496,700	464,400	4,500	271,600	188,400	3,100	25,600	2,200	-	1,300	-
San Diego	66,800	34,000	6,900	10,000	17,100	400	30,100	2,100	-	200	-
San Francisco	-	-	-	-	-	-	-	-	-	-	-
San Joaquin	547,700	511,800	22,800	298,300	190,800	500	23,000	9,400	-	2,900	-
San Luis Obispo	105,000	101,400	47,000	300	54,100	-	1,400	-	-	2,200	-
San Mateo	3,700	3,700	1,200	-	2,500	-	-	-	-	-	-
Santa Barbara	50,600	49,300	22,400	3,400	23,500	200	-	-	-	1,100	-
Santa Clara	25,400	25,100	14,800	300	10,100	-	-	-	-	200	-
Santa Cruz	2,700	2,800	1,300	300	1,100	-	-	-	-	-	-
Shasta	54,900	54,500	27,800	-	26,700	-	-	-	-	400	-
Sierra	8,500	8,500	3,700	-	4,800	-	-	-	-	-	-
Siskiyou	79,100	78,700	45,900	3,400	29,400	-	-	-	-	400	-
Solano	79,100	70,900	25,400	10,000	35,400	-	100	100	-	8,100	-
Sonoma	143,400	127,200	15,100	73,100	39,100	400	12,300	-	-	3,400	-
Stanislaus	944,300	889,000	52,900	499,400	336,700	-	29,400	-	25,300	600	-
Sutter	21,000	19,200	11,900	1,500	5,700	-	-	-	-	1,900	-
Tehama	93,900	92,600	37,600	12,500	42,500	200	-	-	-	1,100	-
Trinity	6,000	5,900	4,500	-	1,500	-	-	-	-	-	-
Tulare	2,156,400	2,118,000	40,100	1,326,500	751,200	-	-	19,300	9,200	10,100	-
Tuolumne	39,900	18,800	13,500	-	5,200	-	-	-	21,200	-	-
Ventura	10,900	11,000	6,900	-	4,000	-	-	-	-	-	-
Yolo	32,800	30,400	11,800	6,000	12,400	200	-	-	-	2,400	-
Yuba	54,700	54,700	13,800	9,200	31,700	-	-	-	-	-	-
Other- not located	1,336,800	-	-	-	-	36,300	15,100	152,200	15,300	4,500	1,113,400
STATE TOTALS	12,500,000	10,483,700	1,027,200	4,960,300	4,496,200	48,100	279,600	284,100	220,600	108,200	1,113,400

**Table 47: Technical Animal Manures (BDT/yr), 2017**

County Name	Total Animal Manure	Total Cattle Manure	Beef Cow Manure	Milk Cow Manure	Other Cattle Manure	Swine	Poultry Layer Chickens	Poultry Broiler Chickens	Poultry Turkeys	Sheep, Lambs, Goats	Horses, other Equine
Alameda	4,900	4,900	2,650	-	2,250	-	-	-	-	-	-
Alpine	700	700	700	-	-	-	-	-	-	-	-
Amador	6,800	6,800	3,650	-	3,150	-	-	-	-	-	-
Butte	7,300	7,050	3,000	550	3,500	250	-	-	-	30	-
Calaveras	7,500	7,475	4,350	-	3,125	-	-	-	-	20	-
Colusa	6,200	6,175	4,300	-	1,875	-	-	-	-	50	-
Contra Costa	5,700	5,650	2,825	150	2,675	-	-	-	-	-	-
Del Norte	8,300	8,275	350	4,650	3,275	-	-	-	-	-	-
El Dorado	2,900	2,875	1,825	-	1,050	-	-	-	-	20	-
Fresno	362,100	289,850	7,250	147,550	135,050	1,000	7,300	44,250	19,400	285	-
Glenn	38,800	38,650	6,500	22,450	9,700	100	-	-	-	50	-
Humboldt	29,300	29,275	6,575	16,450	6,250	-	-	-	-	20	-
Imperial	201,100	200,075	375	7,700	192,000	-	-	-	-	1,045	-
Inyo	5,400	5,350	4,050	-	1,300	-	-	-	-	-	-
Kern	277,800	276,575	12,150	213,700	50,725	250	-	-	-	930	-
Kings	292,600	273,275	2,350	230,100	40,825	150	-	-	19,200	-	-
Lake	2,300	2,150	1,450	-	700	100	-	-	-	-	-
Lassen	15,200	15,125	9,075	-	6,050	-	-	-	-	30	-
Los Angeles	3,500	3,425	325	3,400	(300)	50	50	-	-	20	-
Madera	148,400	133,725	5,725	98,100	29,900	-	-	3,150	11,450	100	-
Marin	18,800	18,750	2,825	12,750	3,175	-	-	-	-	65	-
Mariposa	7,700	7,650	4,250	-	3,400	-	-	-	-	-	-
Mendocino	7,100	6,950	3,750	1,700	1,500	100	-	-	-	60	-
Merced	500,200	447,000	9,150	344,950	92,900	-	28,400	-	24,750	90	-
Modoc	26,300	26,250	17,575	-	8,675	-	-	-	-	50	-
Mono	2,300	2,250	1,525	-	725	-	-	-	-	-	-
Monterey	22,800	22,725	8,125	1,700	12,900	50	50	-	-	10	-
Napa	2,500	2,500	1,450	-	1,050	-	-	-	-	15	-
Nevada	1,700	1,700	1,025	-	675	-	-	-	-	15	-
Orange	300	325	325	-	-	-	-	-	-	-	-
Placer	6,500	6,350	2,700	950	2,700	100	-	-	-	35	-
Plumas	4,200	4,200	1,975	-	2,225	-	-	-	-	-	-
Riverside	159,300	122,625	1,650	90,100	30,875	800	35,500	-	-	360	-
Sacramento	36,200	33,900	5,200	19,300	9,400	300	-	2,000	-	35	-
San Benito	16,300	16,125	7,850	1,000	7,275	150	-	-	-	35	-
San Bernardino	199,500	184,025	1,125	135,800	47,100	1,550	12,800	1,100	-	65	-
San Diego	27,300	11,000	1,725	5,000	4,275	200	15,050	1,050	-	10	-
San Francisco	-	-	-	-	-	-	-	-	-	-	-
San Joaquin	219,100	202,550	5,700	149,150	47,700	250	11,500	4,700	-	145	-
San Luis Obispo	26,200	25,425	11,750	150	13,525	-	700	-	-	110	-
San Mateo	900	925	300	-	625	-	-	-	-	-	-
Santa Barbara	13,300	13,175	5,600	1,700	5,875	100	-	-	-	55	-
Santa Clara	6,400	6,375	3,700	150	2,525	-	-	-	-	10	-
Santa Cruz	800	750	325	150	275	-	-	-	-	-	-
Shasta	13,600	13,625	6,950	-	6,675	-	-	-	-	20	-
Sierra	2,100	2,125	925	-	1,200	-	-	-	-	-	-
Siskiyou	20,500	20,525	11,475	1,700	7,350	-	-	-	-	20	-
Solano	20,700	20,200	6,350	5,000	8,850	-	50	50	-	405	-
Sonoma	56,600	50,100	3,775	36,550	9,775	200	6,150	-	-	170	-
Stanislaus	374,500	347,100	13,225	249,700	84,175	-	14,700	-	12,650	30	-
Sutter	5,200	5,150	2,975	750	1,425	-	-	-	-	95	-
Tehama	26,400	26,275	9,400	6,250	10,625	100	-	-	-	55	-
Trinity	1,500	1,500	1,125	-	375	-	-	-	-	-	-
Tulare	875,800	861,075	10,025	663,250	187,800	-	-	9,650	4,600	505	-
Tuolumne	15,300	4,675	3,375	-	1,300	-	-	-	10,600	-	-
Ventura	2,700	2,725	1,725	-	1,000	-	-	-	-	-	-
Yolo	9,300	9,050	2,950	3,000	3,100	100	-	-	-	120	-
Yuba	16,000	15,975	3,450	4,600	7,925	-	-	-	-	-	-
Other- not located	165,300	-	-	-	-	18,150	7,550	76,100	7,650	225	55,670
STATE TOTALS	4,340,000	3,861,000	256,800	2,480,150	1,124,050	24,050	139,800	142,050	110,300	5,410	55,670

**Table 48: Gross Animal Manures (BDT/yr), 2020**

County Name	Total Animal Manure	Total Cattle Manure	Beef Cow Manure	Milk Cow Manure	Other Cattle Manure	Swine	Poultry Layer Chickens	Poultry Broiler Chickens	Poultry Turkeys	Sheep, Lambs, Goats	Horses, other Equine
Alameda	20,000	20,000	10,800	-	9,200	-	-	-	-	-	-
Alpine	3,000	2,900	2,900	-	-	-	-	-	-	-	-
Amador	29,000	28,600	15,400	-	13,200	-	-	-	-	-	-
Butte	30,000	28,800	12,800	1,200	14,800	520	-	-	-	650	-
Calaveras	32,000	31,300	18,200	-	13,100	-	-	-	-	370	-
Colusa	28,000	26,600	18,500	-	8,100	-	-	-	-	1,080	-
Contra Costa	23,000	23,400	11,800	400	11,200	-	-	-	-	-	-
Del Norte	25,000	25,000	1,500	9,700	13,800	-	-	-	-	-	-
El Dorado	13,000	12,200	7,700	-	4,500	-	-	-	-	370	-
Fresno	1,079,000	919,900	30,900	314,100	574,900	2,100	15,600	94,200	41,300	6,030	-
Glenn	118,000	116,900	27,700	47,800	41,400	260	-	-	-	1,050	-
Humboldt	86,000	85,600	26,700	33,500	25,400	-	-	-	-	430	-
Imperial	869,000	846,200	1,700	16,600	827,900	-	-	-	-	22,580	-
Inyo	22,000	22,000	16,600	-	5,400	-	-	-	-	-	-
Kern	749,000	728,300	52,200	458,500	217,600	540	-	-	-	19,920	-
Kings	721,000	679,300	10,100	493,900	175,300	270	-	-	41,200	-	-
Lake	9,000	9,000	6,100	-	2,900	240	-	-	-	-	-
Lassen	63,000	62,700	37,600	-	25,100	-	-	-	-	580	-
Los Angeles	8,000	7,000	1,300	6,900	(1,200)	110	100	-	-	430	-
Madera	402,000	368,000	24,900	213,100	130,000	-	-	6,900	24,900	2,150	-
Marin	51,000	49,700	11,400	25,600	12,700	-	-	-	-	1,320	-
Mariposa	32,000	31,900	17,700	-	14,200	-	-	-	-	-	-
Mendocino	27,000	25,200	15,500	3,500	6,200	230	-	-	-	1,240	-
Merced	1,301,000	1,184,100	39,500	743,900	400,700	-	61,300	-	53,400	1,940	-
Modoc	114,000	112,600	75,400	-	37,200	-	-	-	-	1,080	-
Mono	10,000	9,600	6,500	-	3,100	-	-	-	-	-	-
Monterey	90,000	89,700	33,300	3,500	52,900	110	100	-	-	220	-
Napa	11,000	10,500	6,100	-	4,400	-	-	-	-	370	-
Nevada	7,000	7,000	4,200	-	2,800	-	-	-	-	340	-
Orange	1,000	1,400	1,400	-	-	-	-	-	-	-	-
Placer	26,000	25,000	11,500	2,000	11,500	260	-	-	-	790	-
Plumas	17,000	17,100	8,000	-	9,100	-	-	-	-	-	-
Riverside	424,000	336,900	7,100	195,700	134,100	1,720	77,100	-	-	7,860	-
Sacramento	106,000	100,200	21,400	39,900	38,900	580	-	4,200	-	690	-
San Benito	69,000	68,100	34,200	2,200	31,700	290	-	-	-	720	-
San Bernardino	525,000	491,100	4,700	287,200	199,200	3,310	27,100	2,300	-	1,400	-
San Diego	69,000	35,000	7,100	10,300	17,600	460	31,100	2,200	-	230	-
San Francisco	-	-	-	-	-	-	-	-	-	-	-
San Joaquin	594,000	555,100	24,700	323,500	206,900	570	25,000	10,200	-	3,120	-
San Luis Obispo	107,000	103,800	48,100	300	55,400	-	1,400	-	-	2,220	-
San Mateo	4,000	3,700	1,200	-	2,500	-	-	-	-	-	-
Santa Barbara	52,000	50,200	22,800	3,500	23,900	220	-	-	-	1,080	-
Santa Clara	26,000	25,800	15,100	300	10,400	-	-	-	-	220	-
Santa Cruz	3,000	2,700	1,300	300	1,100	-	-	-	-	-	-
Shasta	58,000	57,300	29,200	-	28,100	-	-	-	-	370	-
Sierra	9,000	8,500	3,700	-	4,800	-	-	-	-	-	-
Siskiyou	81,000	80,700	47,100	3,500	30,100	-	-	-	-	450	-
Solano	82,000	73,600	26,400	10,400	36,800	-	100	100	-	8,410	-
Sonoma	148,000	131,000	15,500	75,300	40,200	450	12,700	-	-	3,510	-
Stanislaus	1,010,000	951,200	56,600	534,400	360,200	-	31,500	-	27,100	670	-
Sutter	23,000	21,100	13,100	1,700	6,300	-	-	-	-	2,100	-
Tehama	100,000	98,200	39,900	13,300	45,000	260	-	-	-	1,160	-
Trinity	6,000	6,300	4,800	-	1,500	-	-	-	-	-	-
Tulare	2,329,000	2,287,500	43,300	1,432,800	811,400	-	-	20,800	9,900	10,890	-
Tuolumne	41,000	19,300	13,900	-	5,400	-	-	-	21,800	-	-
Ventura	11,000	11,400	7,200	-	4,200	-	-	-	-	-	-
Yolo	35,000	31,900	12,500	6,300	13,100	250	-	-	-	2,530	-
Yuba	61,000	60,500	15,300	10,200	35,000	-	-	-	-	-	-
Other- not located	1,387,000	-	-	-	-	37,620	15,700	157,900	15,800	4,690	1,154,900
STATE TOTALS	13,400,000	11,218,600	1,082,100	5,325,300	4,811,200	50,370	298,800	298,800	235,400	115,260	1,154,900

**Table 49: Technical Animal Manures (BDT/yr), 2020**

County Name	Total Animal Manure	Total Cattle Manure	Beef Cow Manure	Milk Cow Manure	Other Cattle Manure	Swine	Poultry Layer Chickens	Poultry Broiler Chickens	Poultry Turkeys	Sheep, Lambs, Goats	Horses, other Equine
Alameda	5,000	5,000	2,700	-	2,300	-	-	-	-	-	-
Alpine	700	730	730	-	-	-	-	-	-	-	-
Amador	7,200	7,150	3,850	-	3,300	-	-	-	-	-	-
Butte	7,800	7,500	3,200	600	3,700	260	-	-	-	30	-
Calaveras	7,900	7,830	4,550	-	3,280	-	-	-	-	20	-
Colusa	6,700	6,660	4,630	-	2,030	-	-	-	-	50	-
Contra Costa	6,000	5,950	2,950	200	2,800	-	-	-	-	-	-
Del Norte	8,700	8,680	380	4,850	3,450	-	-	-	-	-	-
El Dorado	3,100	3,060	1,930	-	1,130	-	-	-	-	20	-
Fresno	385,400	308,510	7,730	157,050	143,730	1,050	7,800	47,100	20,650	300	-
Glenn	41,400	41,180	6,930	23,900	10,350	130	-	-	-	50	-
Humboldt	29,800	29,780	6,680	16,750	6,350	-	-	-	-	20	-
Imperial	216,800	215,710	430	8,300	206,980	-	-	-	-	1,130	-
Inyo	5,500	5,500	4,150	-	1,350	-	-	-	-	-	-
Kern	298,000	296,700	13,050	229,250	54,400	270	-	-	-	1,000	-
Kings	314,100	293,310	2,530	246,950	43,830	140	-	-	20,600	-	-
Lake	2,400	2,260	1,530	-	730	120	-	-	-	-	-
Lassen	15,700	15,680	9,400	-	6,280	-	-	-	-	30	-
Los Angeles	3,600	3,480	330	3,450	(300)	60	50	-	-	20	-
Madera	161,300	145,280	6,230	106,550	32,500	-	-	3,450	12,450	110	-
Marin	18,900	18,830	2,850	12,800	3,180	-	-	-	-	70	-
Mariposa	8,000	7,980	4,430	-	3,550	-	-	-	-	-	-
Mendocino	7,400	7,180	3,880	1,750	1,550	120	-	-	-	60	-
Merced	539,500	482,010	9,880	371,950	100,180	-	30,650	-	26,700	100	-
Modoc	28,200	28,150	18,850	-	9,300	-	-	-	-	50	-
Mono	2,400	2,410	1,630	-	780	-	-	-	-	-	-
Monterey	23,400	23,310	8,330	1,750	13,230	60	50	-	-	10	-
Napa	2,700	2,630	1,530	-	1,100	-	-	-	-	20	-
Nevada	1,800	1,750	1,050	-	700	-	-	-	-	20	-
Orange	400	350	350	-	-	-	-	-	-	-	-
Placer	6,900	6,760	2,880	1,000	2,880	130	-	-	-	40	-
Plumas	4,300	4,280	2,000	-	2,280	-	-	-	-	-	-
Riverside	173,000	133,160	1,780	97,850	33,530	860	38,550	-	-	390	-
Sacramento	37,500	35,030	5,350	19,950	9,730	290	-	2,100	-	30	-
San Benito	17,800	17,580	8,550	1,100	7,930	150	-	-	-	40	-
San Bernardino	211,000	194,580	1,180	143,600	49,800	1,660	13,550	1,150	-	70	-
San Diego	28,200	11,330	1,780	5,150	4,400	230	15,550	1,100	-	10	-
San Francisco	-	-	-	-	-	-	-	-	-	-	-
San Joaquin	237,700	219,660	6,180	161,750	51,730	290	12,500	5,100	-	160	-
San Luis Obispo	26,800	26,030	12,030	150	13,850	-	700	-	-	110	-
San Mateo	900	930	300	-	630	-	-	-	-	-	-
Santa Barbara	13,600	13,430	5,700	1,750	5,980	110	-	-	-	50	-
Santa Clara	6,500	6,530	3,780	150	2,600	-	-	-	-	10	-
Santa Cruz	800	760	330	150	280	-	-	-	-	-	-
Shasta	14,400	14,330	7,300	-	7,030	-	-	-	-	20	-
Sierra	2,100	2,130	930	-	1,200	-	-	-	-	-	-
Siskiyou	21,100	21,060	11,780	1,750	7,530	-	-	-	-	20	-
Solano	21,500	21,000	6,600	5,200	9,200	-	50	50	-	420	-
Sonoma	58,300	51,580	3,880	37,650	10,050	230	6,350	-	-	180	-
Stanislaus	400,700	371,400	14,150	267,200	90,050	-	15,750	-	13,550	30	-
Sutter	5,800	5,710	3,280	850	1,580	-	-	-	-	110	-
Tehama	28,100	27,880	9,980	6,650	11,250	130	-	-	-	60	-
Trinity	1,600	1,580	1,200	-	380	-	-	-	-	-	-
Tulare	946,000	930,080	10,830	716,400	202,850	-	-	10,400	4,950	540	-
Tuolumne	15,700	4,830	3,480	-	1,350	-	-	-	10,900	-	-
Ventura	2,900	2,850	1,800	-	1,050	-	-	-	-	-	-
Yolo	9,800	9,560	3,130	3,150	3,280	130	-	-	-	130	-
Yuba	17,700	17,680	3,830	5,100	8,750	-	-	-	-	-	-
Other- not located	171,500	-	-	-	-	18,810	7,850	78,950	7,900	230	57,750
STATE TOTALS	4,600,000	4,136,280	270,700	2,662,650	1,202,930	25,230	149,400	149,400	117,700	5,760	57,750

## 2.2 Forestry

The four main categories of forestry biomass are logging slash, mill residues, biomass from forest thinning and stand improvement operations, and chaparral. Estimates of logging slash, thinnings, and chaparral were developed by the California Department of Forestry and Fire Protection (CDFFP) and are reported without modification. Mill residues were computed by factoring timber harvest data. Logging slash, mill residues, and forest thinnings are already in commercial use as fuel for power generation. Harvesting of chaparral is not so far conducted on a large scale. Distribution of forest biomass of all types in California for 2007 is shown in Figure 6. Gross and technical forest biomass for 2007 through 2020 is listed by county in Tables 50 and 51 respectively.

- *Logging slash* comprises branches, tops, and other materials removed from trees during timber harvest. Slash excludes the tree stem or “bole,” defined as from a one-foot stump to a four inch diameter top. Because the volume of slash is directly proportional to logging activity, slash has declined considerably in the state in recent years. Slash left on the ground after harvest can be a substantial source of surface fuels which can carry wildfire. Production of slash is estimated at nearly 8 million BDT/y.
- *Forest thinnings* are non-merchantable components extracted during harvest activities and include understory brush, small diameter tree boles, and other material transported to the mill that cannot produce sawlogs. Thinning refers to silvicultural treatments designed to reduce crowding and enhance overall forest health and fire resistance. Thinning of forest and shrub lands by mechanical means (other than by prescribed fire) is often emphasized when the intent is to reduce the threat of catastrophic wildfire near houses or other vulnerable assets and where air quality is a concern. Thinning may or may not produce merchantable saw logs (close to half of which may end up as mill waste). The issue of mechanically thinning forests has been and remains controversial, but thinning is likely to increase, particularly in wildland-urban interface areas, due to new federal legislation<sup>7</sup> and increasing public concerns over the risk from wildfire. Estimates of the technical availability exclude forest reserves, stream management zones, coastal protection zones, coastal sage scrub habitats, national forest lands with slopes steeper than 35%, and private and other public forest lands with slopes steeper than 30%. There are an estimated 7.6 million BDT/y of thinnings.
- *Sawmill residues* are a byproduct of the milling of sawlogs that consist generally of softwood tree boles with a diameter at breast height (dbh) of about ten inches. Sawmill and other forest products manufacturing operations generate a variety of wood residues including bark, sawdust, planer shavings, and trim ends. Resource quantities follow logging activity although imports and exports can also affect mill activity. Mill residue represents about half of saw log weight. A large fraction of this material is technically available for use, and about 1.3 million dry tons are already in use for power generation in the state<sup>8</sup> with additional amounts used for

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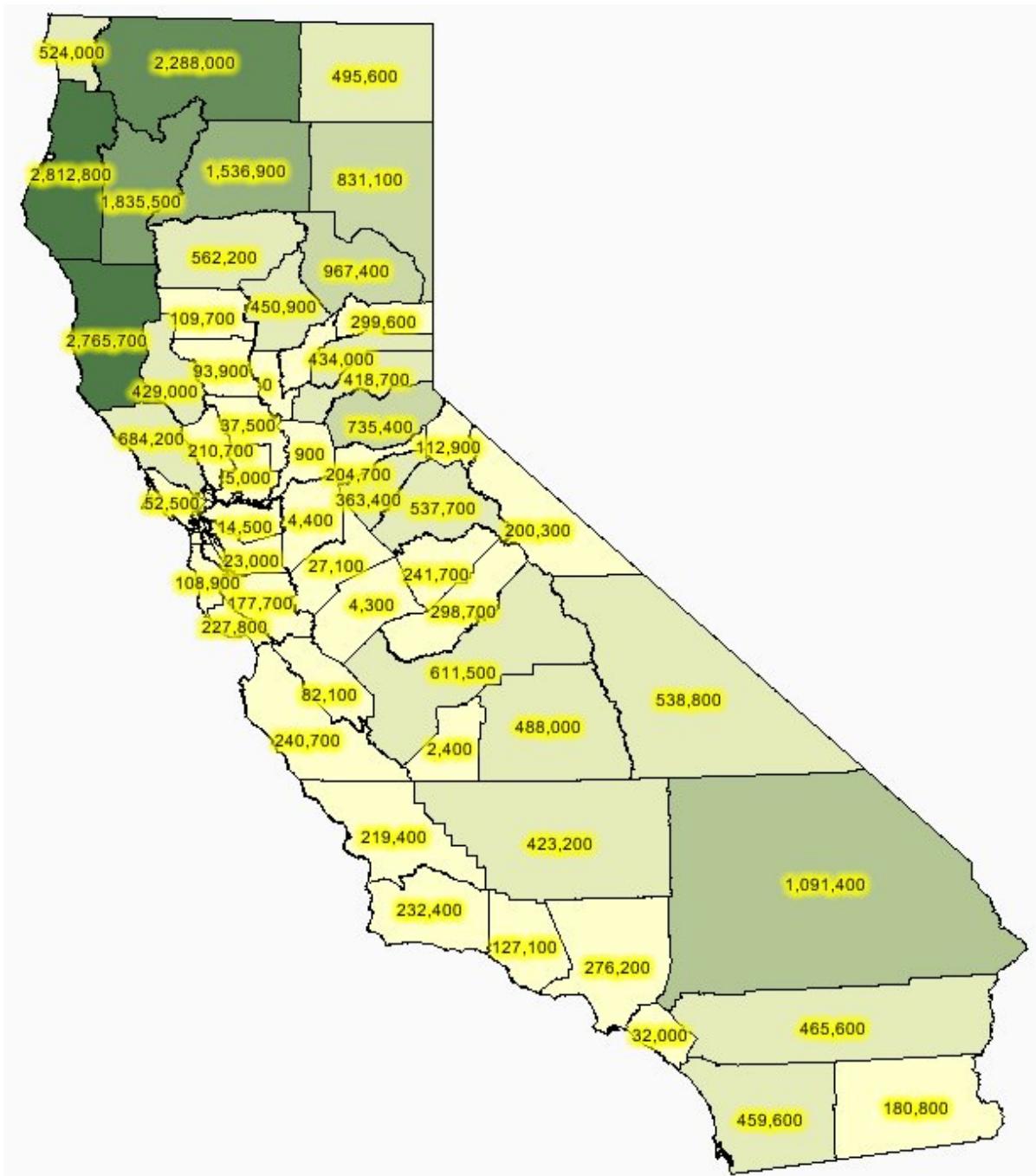
<sup>7</sup> Healthy Forests Restoration Act, 2003 (HR 1904).

<sup>8</sup> Morris, G. 2003. The status of biomass power generation in California, July 31, 2003. NREL/SR-510-35114, National Renewable Energy Laboratory, Golden, CO.

landscape and other products. Much of the power generated is used on-site at the mill and is not exported to the grid. Around 6 million BDT/y are estimated to be generated at mills.

- *Shrub or chaparral* is comprised of mostly shrubby evergreen plants adapted to the semi-arid desert regions of California, especially in the south state. Shrublands range over a large area but so far there has been little development of this biomass for energy. Because shrub biomass has no current commercial value, it is only available as an energy resource through habitat improvement activities (such as thinning) or fuel treatment operations designed to reduce wildfire risks. For 2005, nearly 5 million BDT/y were estimated to be available.

**Figure 6: Forest Biomass (gross BDT/yr) in California, 2007.**



**Table 50: Gross Forest Biomass (BDT/yr), 2007-2020**

County Name	Forest Thinnings	Forest Slash	Shrub	Mill Residue	Total	Forestry
Alameda	2,200	10,800	9,200	800	23,000	
Alpine	8,500	38,300	11,000	55,100	112,900	
Amador	87,200	64,600	6,800	46,100	204,700	
Butte	185,200	141,000	7,600	117,100	450,900	
Calaveras	132,700	109,100	42,900	78,700	363,400	
Colusa	15,800	27,000	41,400	9,700	93,900	
Contra Costa	100	4,300	10,000	100	14,500	
Del Norte	138,700	207,700	7,500	170,100	524,000	
El Dorado	241,600	238,600	21,400	233,800	735,400	
Fresno	63,300	252,600	25,500	270,100	611,500	
Glenn	9,800	44,200	23,600	32,100	109,700	
Humboldt	1,347,700	871,000	10,800	583,300	2,812,800	
Imperial	-	-	180,800	-	180,800	
Inyo	5,300	34,600	476,700	22,200	538,800	
Kern	23,500	100,900	266,600	32,200	423,200	
Kings	-	-	2,400	-	2,400	
Lake	118,900	119,800	125,900	64,400	429,000	
Lassen	170,100	168,500	289,400	203,100	831,100	
Los Angeles	1,400	38,100	219,500	17,200	276,200	
Madera	52,300	114,900	9,200	122,300	298,700	
Marin	25,200	15,800	8,100	3,400	52,500	
Marijuana	79,000	82,300	39,800	40,600	241,700	
Mendocino	1,393,700	797,200	59,100	515,700	2,765,700	
Merced	-	2,700	1,600	-	4,300	
Modoc	95,300	155,900	123,800	120,600	495,600	
Mono	11,400	47,900	99,000	42,000	200,300	
Monterey	1,000	132,500	95,200	12,000	240,700	
Napa	94,700	51,200	51,600	13,200	210,700	
Nevada	181,300	127,900	9,500	115,300	434,000	
Orange	-	2,500	28,900	600	32,000	
Placer	125,900	144,700	11,900	136,200	418,700	
Plumas	209,600	320,100	15,800	421,900	967,400	
Riverside	800	14,700	442,700	7,400	465,600	
Sacramento	-	700	200	-	900	
San Benito	2,600	43,500	33,000	3,000	82,100	
San Bernardino	8,200	66,400	984,700	32,100	1,091,400	
San Diego	24,900	43,800	381,900	9,000	459,600	
San Francisco	-	-	-	-	-	
San Joaquin	1,500	2,000	600	300	4,400	
San Luis Obispo	20,500	114,500	77,100	7,300	219,400	
San Mateo	42,800	25,700	17,600	22,800	108,900	
Santa Barbara	6,000	83,700	129,900	12,800	232,400	
Santa Clara	38,100	72,200	56,800	10,600	177,700	
Santa Cruz	100,500	61,600	13,900	51,800	227,800	
Shasta	597,500	493,300	82,800	363,300	1,536,900	
Sierra	58,200	99,400	13,200	128,800	299,600	
Siskiyou	631,100	786,200	89,000	781,700	2,288,000	
Solano	-	2,100	2,800	100	5,000	
Sonoma	359,700	199,700	24,800	100,000	684,200	
Stanislaus	-	10,200	16,100	800	27,100	
Sutter	-	-	-	-	-	
Tehama	141,900	211,500	57,100	151,700	562,200	
Trinity	559,600	670,100	19,100	586,700	1,835,500	
Tulare	59,500	210,200	23,400	194,900	488,000	
Tuolumne	110,400	187,300	42,200	197,800	537,700	
Ventura	-	37,500	74,200	15,400	127,100	
Yolo	-	14,300	22,900	300	37,500	
Yuba	72,900	55,400	700	37,100	166,100	
Other- not located	-	-	-	-	-	
STATE TOTALS	7,700,000	8,000,000	4,900,000	6,200,000	26,800,000	

**Table 51: Technical Forest Biomass (BDT/yr), 2007-2020**

County Name	Forest Thinnings	Forest Slash	Shrub	Mill Residue	Total	Forestry
Alameda	900	4,800	2,400	300	8,400	
Alpine	3,900	10,300	3,700	14,700	32,600	
Amador	62,600	44,700	5,300	30,500	143,100	
Butte	118,100	91,800	4,700	79,900	294,500	
Calaveras	90,600	77,000	26,800	55,900	250,300	
Colusa	8,400	16,400	28,000	5,500	58,300	
Contra Costa	100	2,500	2,400	100	5,100	
Del Norte	48,700	61,500	1,200	46,000	157,400	
El Dorado	179,600	175,600	15,000	175,100	545,300	
Fresno	33,300	108,200	8,400	109,200	259,100	
Glenn	4,900	23,900	14,900	16,700	60,400	
Humboldt	632,800	401,800	3,100	275,800	1,313,500	
Imperial	-	-	142,400	-	142,400	
Inyo	1,400	8,900	119,200	5,800	135,300	
Kern	8,900	48,200	158,000	16,900	232,000	
Kings	-	-	1,000	-	1,000	
Lake	74,100	74,000	79,500	37,500	265,100	
Lassen	148,900	143,200	221,200	173,100	686,400	
Los Angeles	500	16,000	102,800	5,900	125,200	
Madera	38,400	74,000	5,800	75,300	193,500	
Marin	14,300	9,400	200	2,000	25,900	
Mariposa	56,900	56,200	20,600	27,800	161,500	
Mendocino	627,400	368,200	26,100	220,500	1,242,200	
Merced	-	1,800	700	-	2,500	
Modoc	84,000	134,700	105,900	101,100	425,700	
Mono	7,400	25,800	42,800	26,000	102,000	
Monterey	400	65,900	26,900	2,400	95,600	
Napa	59,800	32,800	30,500	8,200	131,300	
Nevada	129,600	91,100	6,000	82,300	309,000	
Orange	-	1,200	8,700	200	10,100	
Placer	74,600	87,100	5,500	85,100	252,300	
Plumas	149,800	216,500	8,800	291,700	666,800	
Riverside	500	6,000	219,400	2,800	228,700	
Sacramento	-	600	100	-	700	
San Benito	900	23,800	16,200	1,600	42,500	
San Bernardino	3,700	42,300	576,500	17,000	639,500	
San Diego	14,200	28,600	202,100	5,600	250,500	
San Francisco	-	-	-	-	-	
San Joaquin	700	1,200	400	100	2,400	
San Luis Obispo	8,100	70,900	39,600	3,800	122,400	
San Mateo	16,400	10,000	1,900	9,000	37,300	
Santa Barbara	2,100	39,200	37,600	4,000	82,900	
Santa Clara	12,100	34,000	21,800	4,400	72,300	
Santa Cruz	43,300	27,500	4,900	23,200	98,900	
Shasta	321,900	289,400	51,900	234,600	897,800	
Sierra	37,600	63,800	6,600	85,200	193,200	
Siskiyou	325,300	355,100	52,300	358,300	1,091,000	
Solano	-	1,600	1,400	100	3,100	
Sonoma	179,200	101,500	12,500	45,200	338,400	
Stanislaus	-	5,600	6,000	400	12,000	
Sutter	-	-	-	-	-	
Tehama	82,400	130,600	33,100	89,400	335,500	
Trinity	241,100	267,300	7,900	223,000	739,300	
Tulare	22,900	88,300	6,600	82,200	200,000	
Tuolumne	78,800	124,600	24,600	135,200	363,200	
Ventura	-	14,900	15,100	4,200	34,200	
Yolo	-	10,200	12,100	200	22,500	
Yuba	54,100	41,200	500	27,800	123,600	
Other- not located	-	-	-	-	-	
STATE TOTALS	4,110,000	4,250,000	2,580,000	3,330,000	14,300,000	

## 2.3 Municipal Wastes

Municipal wastes are classified as municipal solid wastes (MSW), municipal waste water or sewage, and biosolids from waste water treatment.

### 2.3.1 Municipal Solid Wastes

Estimated MSW generation in California now exceeds 90 million wet tons per year.<sup>9</sup> Disposal in landfills reached 45 million wet tons in 2006 (including 2.7 million tons of green waste used as alternative daily cover (ADC)). The composition of landfilled MSW assumed for this study is shown in Table 52.<sup>10</sup> The biomass component of MSW includes construction and demolition wood (also referred to as urban wood fuel), paper, grass and other green waste, food waste, and other organics not including plastics and tires. Only the landfilled biomass fraction is considered in the resource estimates reported here. The total biomass in MSW (landfilled and diverted) is estimated at 35 million BDT/y, amounting to roughly 1 BDT biomass per person per year in the state.. Estimates of biomass from MSW were made for the years 2007, 2010, 2017, and 2020 by escalating base year data using average county population growth factors under the assumption that per capita was generation and waste diversion rates would remain constant. Population growth rates, projected populations, and growth factors from 2007 are listed in Tables 53 – 55.<sup>11</sup> Resource quantities by biomass type were computed for the fraction disposed in landfills. The CIWMB does not track composition of diverted MSW, so only the total estimated biomass is reported for this fraction. The distributions of biomass in landfilled and diverted MSW throughout the state are shown in Figure 7 and 8.

Technical availability factors assumed for the various MSW fractions are listed in Table 56. Technical factors for landfilled material are assumed to be 50%. The diverted fraction is not well characterized and is currently utilized. Therefore, the technical availability factor for the diverted fraction is considered to be zero. Currently, diverted materials are used primarily in recycling, composting, and power generation through mass burn units. Additional energy generation will compete with other markets for the diverted materials. Estimated gross and technical biomass quantities for MSW by county are listed in Tables 57 - 64 for years 2007, 2010, 2017, and 2020.

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<sup>9</sup> See <http://www.ciwmb.ca.gov/LGCentral/Rates/Graphs/RateTable.htm>

<sup>10</sup> Cascadia, (2004). Statewide waste characterization study. Contractor Report to the CIWMB. Available from: <http://www.ciwmb.ca.gov/WasteChar/WasteStudies.htm#2004>.

<sup>11</sup> State of California, Department of Finance, *E-1 Population Estimates for Cities, Counties and the State with Annual Percent Change — January 1, 2006 and 2007. Sacramento, California, May 2007.* <http://www.dof.ca.gov/HTML/DEMOGRAP/ReportsPapers/E1/E-1text.php>

**Table 52: Composition and Properties of MSW. \***

Component	Landfilled (million tons, wet)	% of Total Wet MSW	Moisture (% wb)	Landfilled (million tons, dry)	Ash* (% wb)	Ash (Million ton/yr)	HHV <sup>†</sup> (MJ/kg, as received)	HHV contribution to composite stream (MJ kg <sup>-1</sup> as received)	(HHV MJ/kg dry)
<b>Biomass</b>									
Paper/Cardboard	8.9	19.8	10	8.0	5.3	0.5	16	3.16	17.8
Food	6.2	13.7	70	1.9	5.0	0.3	4.2	0.58	14.0
Leaves and Grass	1.8	4.0	60	0.7	4.0	0.1	6	0.24	15.0
Other Organics	1.9	4.1	4	1.8	10.0	0.2	8.5	0.35	8.9
C&D Lumber	4.1	9.0	12	3.6	5.0	0.2	17	1.54	19.3
Prunings, trimmings, green ADC	3.6	8.1	40	2.2	3.6	0.1	11.4	0.92	19.0
Branches and stumps	0.1	0.3	40	0.1	3.6	0.0	11.4	0.03	19.0
Biomass Carbon Compounds -	<b>26.5</b>	<b>59.0</b>	<b>31.5</b>	<b>18.2</b>	<b>5.2</b>	<b>1.4</b>	<b>11.6</b>	<b>6.82</b>	<b>16.9</b>
<b>Total</b>									
<b>Other Organics</b>									
All non-Film Plastic	2.2	4.8	0.2	2.2	2.0	0.0	22	1.06	22.0
Textiles	1.8	4.0	10	1.6	7.0	0.1	17.4	0.70	19.3
Film Plastic	1.9	4.1	0.2	1.9	3.0	0.1	45	1.86	45.1
Non-Biomass Carbon Compounds - <b>Total</b>	<b>5.8</b>	<b>13.0</b>	<b>3.3</b>	<b>5.6</b>	<b>3.9</b>	<b>0.2</b>	<b>27.9</b>	<b>3.62</b>	<b>28.8</b>
<b>Inorganic</b>									
Other C&D	5.1	11.4	-	5.1	100	5.1	-	-	-
Metal	3.3	7.2	-	3.3	100	3.3	-	-	-
Other Mixed and Mineralized	3.3	7.2	-	3.3	100	3.3	-	-	-
Glass	1.0	2.2	-	1.0	100	1.0	-	-	-
<b>Mineral Total</b>	<b>12.6</b>	<b>28.0</b>	<b>-</b>	<b>12.6</b>					
<b>Total Landfilled MSW</b>	<b>45</b>	<b>100</b>	<b>19</b>	<b>36</b>	<b>32.1</b>	<b>14.4</b>	<b>10.4</b>	<b>10.4</b>	<b>12.9</b>

\* Total disposal shown here includes 2.7 million tons of green waste used as alternative daily cover (ADC) [shows up in the 'Prunings, trimmings, green ADC' row].

### 2.3.2 Biosolids

Organic solids or sludge resulting from waste water treatment are another source of biomass. Estimates of biosolids production were adapted from US EPA data for California reported by water treatment facility.<sup>12</sup> Biosolids generation and the amounts landfilled and diverted are listed in Tables 57 – 64. Of the diverted fraction, 80% is assumed to be available for conversion (Table 56). The landfilled fraction is considered separately unavailable to avoid double counting the resource in landfilled MSW.

### 2.3.3 Biogas from Landfill and Waste Water Treatment Plants

Landfills generate a methane-rich biogas that in some instances is already being used for power generation and can be further developed. Some sewage and other waste water treatment facilities employ anaerobic digesters to stabilize a portion of the waste and also produce biogas. Because they are derived from the municipal waste resource, landfill gas and sewage digester gas are not included in Tables 57 - 64 but are instead included directly under the power generation estimates described later.

<sup>12</sup> Fondahl, L.V. US Environmental Protection Agency, Region 9.

**Table 53: Projected Mean Population Growth Rates by County (%) / year)**

COUNTY	2000-2005	2005-2010	2010-2015	2015-2020	2000-2020
ALAMEDA	0.71	0.59	0.72	0.70	0.68
ALPINE	-0.23	1.89	0.61	0.59	0.71
AMADOR	1.44	1.21	1.74	1.60	1.50
BUTTE	1.16	1.26	2.14	1.93	1.62
CALAVERAS	2.12	1.02	1.73	1.59	1.62
COLUSA	2.23	2.29	2.33	2.08	2.23
CONTRA COSTA	1.38	0.99	1.46	1.36	1.30
DEL NORTE	1.05	1.22	1.59	1.48	1.33
EL DORADO	1.97	1.60	1.63	1.51	1.68
FRESNO	2.08	1.98	2.13	1.92	2.03
GLENN	1.24	1.64	2.19	1.98	1.76
HUMBOLDT	0.84	0.38	0.54	0.53	0.57
IMPERIAL	2.68	2.94	2.48	2.21	2.58
INYO	0.40	0.68	0.67	0.65	0.60
KERN	2.93	2.54	2.35	2.10	2.48
KINGS	2.38	2.36	2.39	2.13	2.31
LAKE	1.71	1.11	1.49	1.39	1.42
LASSEN	0.76	1.37	1.15	1.09	1.09
LOS ANGELES	1.28	0.60	0.66	0.64	0.79
MADERA	2.72	2.60	2.95	2.57	2.71
MARIN	0.33	0.09	0.26	0.26	0.23
MARIPOSA	1.14	1.03	1.34	1.26	1.19
MENDOCINO	0.82	0.61	0.93	0.89	0.81
MERCED	2.91	2.33	2.59	2.29	2.53
MODOC	0.42	1.91	2.06	1.87	1.56
MONO	0.84	1.80	2.10	1.90	1.66
MONTEREY	0.98	0.42	0.98	0.94	0.83
NAPA	1.33	1.32	1.56	1.45	1.42
NEVADA	1.52	0.57	1.12	1.06	1.07
ORANGE	1.33	1.08	0.89	0.85	1.04
PLACER	4.38	2.15	2.23	2.01	2.69
PLUMAS	0.54	0.35	0.50	0.49	0.47
RIVERSIDE	4.26	3.11	2.81	2.46	3.16
SACRAMENTO	2.21	1.08	1.15	1.09	1.38
SAN BENITO	1.29	2.24	2.88	2.51	2.23
SAN BERNARDINO	2.74	2.01	1.79	1.64	2.04
SAN DIEGO	1.48	0.94	1.07	1.02	1.13
SAN FRANCISCO	0.37	0.56	0.32	0.31	0.39
SAN JOAQUIN	3.06	2.30	2.85	2.49	2.68
SAN LUIS OBISPO	1.10	0.56	0.87	0.83	0.84
SAN MATEO	0.30	0.41	0.33	0.33	0.34
SANTA BARBARA	0.92	0.69	0.57	0.55	0.68
SANTA CLARA	0.81	0.83	0.83	0.80	0.82
SANTA CRUZ	0.36	0.51	0.72	0.69	0.57
SHASTA	1.85	1.20	1.65	1.52	1.56
SIERRA	-1.03	0.64	-0.33	-0.34	-0.27
SISKIYOU	0.63	0.45	0.87	0.83	0.70
SOLANO	1.21	0.91	1.37	1.28	1.19
SONOMA	0.73	0.68	1.00	0.96	0.84
STANISLAUS	2.48	1.88	2.38	2.12	2.21
SUTTER	2.55	2.53	3.54	3.00	2.90
TEHAMA	1.72	1.42	2.03	1.85	1.75
TRINITY	1.20	1.67	1.94	1.77	1.65
TULARE	2.39	2.33	2.68	2.37	2.44
TUOLUMNE	1.10	0.27	0.91	0.87	0.79
VENTURA	1.41	1.01	1.15	1.09	1.16
YOLO	2.11	1.75	1.82	1.67	1.84
YUBA	2.51	3.23	3.35	2.87	2.99
CALIFORNIA	1.62	1.16	1.25	1.17	1.30

**Table 54: Projected County Populations**

County	2007	2010	2017	2020
ALAMEDA	1,526,148	1,550,133	1,630,730	1,663,481
ALPINE	1,261	1,369	1,406	1,453
AMADOR	38,435	40,337	45,303	47,593
BUTTE	218,069	230,116	265,351	281,442
CALAVERAS	46,028	47,750	53,756	56,318
COLUSA	21,951	23,787	27,618	29,588
CONTRA COSTA	1,042,341	1,075,931	1,189,479	1,237,544
DEL NORTE	29,341	30,983	34,397	36,077
EL DORADO	178,674	189,308	210,522	221,140
FRESNO	917,515	983,478	1,129,222	1,201,792
GLENN	28,915	30,880	35,648	37,959
HUMBOLDT	131,959	134,785	139,743	142,167
IMPERIAL	172,672	189,675	221,833	239,149
INYO	18,383	19,183	19,987	20,495
KERN	801,648	871,728	1,012,601	1,086,113
KINGS	151,381	164,535	191,653	205,707
LAKE	64,276	67,530	74,528	77,912
LASSEN	36,375	37,918	40,922	42,394
LOS ANGELES	10,331,939	10,514,663	11,004,166	11,214,237
MADERA	148,721	162,114	195,966	212,874
MARIN	255,982	253,682	259,301	260,305
MARIPOSA	18,254	19,108	20,883	21,743
MENDOCINO	90,291	93,166	99,183	102,017
MERCED	251,510	273,935	323,368	348,690
MODOC	9,721	10,809	12,253	13,134
MONO	13,985	14,833	17,040	18,080
MONTEREY	425,960	433,283	464,435	476,642
NAPA	135,969	142,767	158,371	165,786
NEVADA	99,766	102,649	110,881	114,451
ORANGE	3,098,121	3,227,836	3,418,007	3,520,265
PLACER	324,495	347,543	401,897	428,535
PLUMAS	21,128	21,824	22,504	22,934
RIVERSIDE	2,031,625	2,239,053	2,674,789	2,904,848
SACRAMENTO	1,406,804	1,451,866	1,569,815	1,622,306
SAN BENITO	57,803	64,230	76,911	83,792
SAN BERNARDINO	2,028,013	2,177,596	2,441,577	2,581,371
SAN DIEGO	3,098,269	3,199,706	3,440,764	3,550,714
SAN FRANCISCO	808,844	818,163	836,109	844,466
SAN JOAQUIN	679,687	741,417	890,087	965,094
SAN LUIS OBISPO	264,900	269,734	286,667	293,540
SAN MATEO	733,496	736,667	754,910	761,455
SANTA BARBARA	424,425	434,497	451,155	459,498
SANTA CLARA	1,808,056	1,837,361	1,948,562	1,992,805
SANTA CRUZ	264,125	268,016	281,913	287,480
SHASTA	181,401	191,722	213,640	224,386
SIERRA	3,485	3,628	3,503	3,508
SISKIYOU	45,953	47,109	50,001	51,283
SOLANO	424,823	441,061	483,953	503,248
SONOMA	481,765	495,412	530,568	546,151
STANISLAUS	521,497	559,708	653,411	699,144
SUTTER	93,919	102,326	128,491	141,159
TEHAMA	61,774	65,593	74,992	79,484
TRINITY	14,171	15,172	17,205	18,236
TULARE	429,006	466,893	554,675	599,117
TUOLUMNE	57,223	58,721	62,489	64,161
VENTURA	825,512	855,876	924,457	956,392
YOLO	193,983	206,100	232,186	245,052
YUBA	70,745	80,411	98,802	109,216
CALIFORNIA	37,662,518	39,135,676	42,514,589	44,135,923

**Table 55: Projected Population Growth Factors by County**

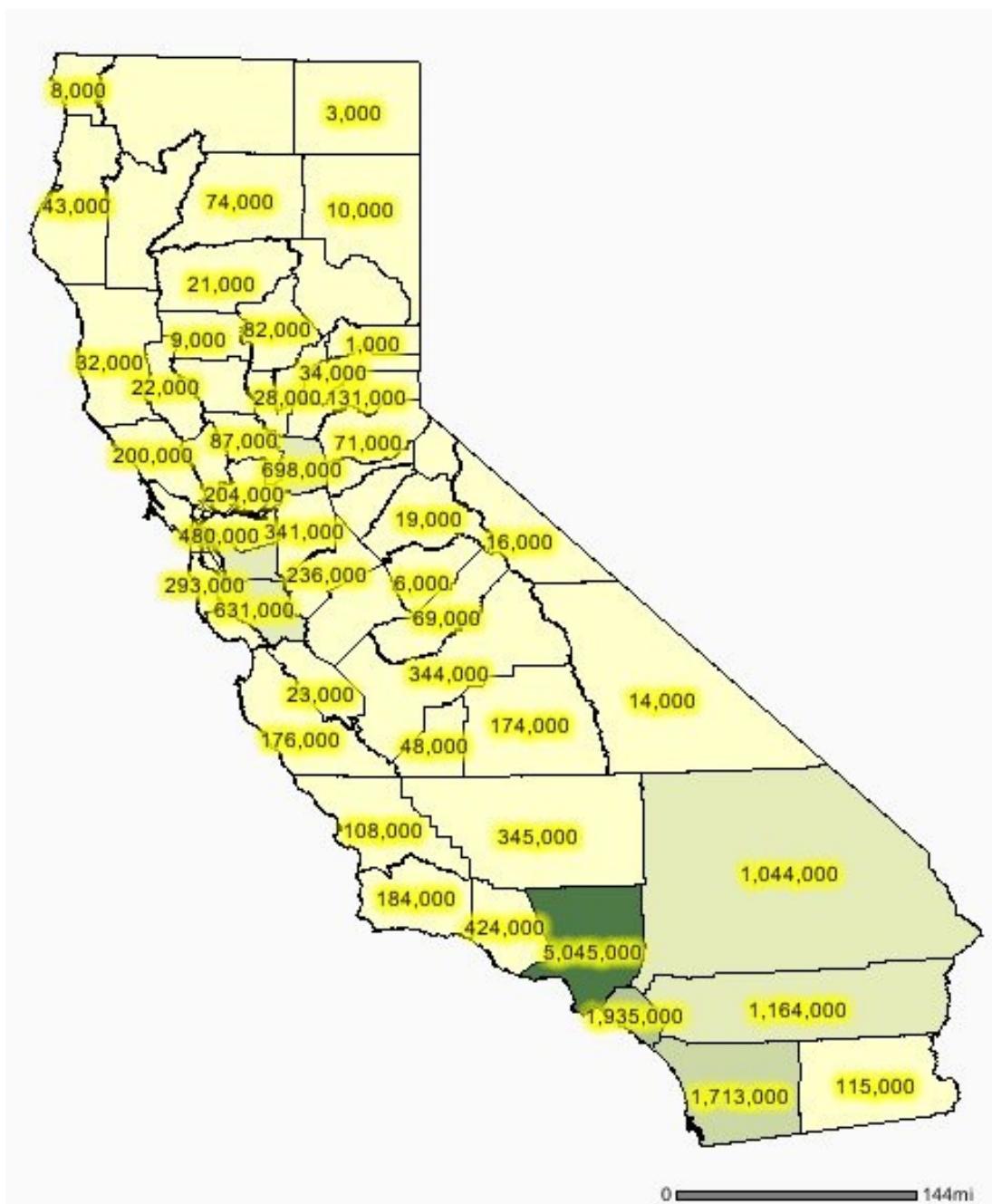
County	2007-2010	2007-2015	2007-2020
ALAMEDA	1.016	1.069	1.090
ALPINE	1.086	1.115	1.152
AMADOR	1.049	1.179	1.238
BUTTE	1.055	1.217	1.291
CALAVERAS	1.037	1.168	1.224
COLUSA	1.084	1.258	1.348
CONTRA COSTA	1.032	1.141	1.187
DEL NORTE	1.056	1.172	1.230
EL DORADO	1.060	1.178	1.238
FRESNO	1.072	1.231	1.310
GLENN	1.068	1.233	1.313
HUMBOLDT	1.021	1.059	1.077
IMPERIAL	1.098	1.285	1.385
INYO	1.044	1.087	1.115
KERN	1.087	1.263	1.355
KINGS	1.087	1.266	1.359
LAKE	1.051	1.160	1.212
LASSEN	1.042	1.125	1.165
LOS ANGELES	1.018	1.065	1.085
MADERA	1.090	1.318	1.431
MARIN	0.991	1.013	1.017
MARIPOSA	1.047	1.144	1.191
MENDOCINO	1.032	1.098	1.130
MERCED	1.089	1.286	1.386
MODOC	1.112	1.260	1.351
MONO	1.061	1.218	1.293
MONTEREY	1.017	1.090	1.119
NAPA	1.050	1.165	1.219
NEVADA	1.029	1.111	1.147
ORANGE	1.042	1.103	1.136
PLACER	1.071	1.239	1.321
PLUMAS	1.033	1.065	1.085
RIVERSIDE	1.102	1.317	1.430
SACRAMENTO	1.032	1.116	1.153
SAN BENITO	1.111	1.331	1.450
SAN BERNARDINO	1.074	1.204	1.273
SAN DIEGO	1.033	1.111	1.146
SAN FRANCISCO	1.012	1.034	1.044
SAN JOAQUIN	1.091	1.310	1.420
SAN LUIS OBISPO	1.018	1.082	1.108
SAN MATEO	1.004	1.029	1.038
SANTA BARBARA	1.024	1.063	1.083
SANTA CLARA	1.016	1.078	1.102
SANTA CRUZ	1.015	1.067	1.088
SHASTA	1.057	1.178	1.237
SIERRA	1.041	1.005	1.007
SISKIYOU	1.025	1.088	1.116
SOLANO	1.038	1.139	1.185
SONOMA	1.028	1.101	1.134
STANISLAUS	1.073	1.253	1.341
SUTTER	1.090	1.368	1.503
TEHAMA	1.062	1.214	1.287
TRINITY	1.071	1.214	1.287
TULARE	1.088	1.293	1.397
TUOLUMNE	1.026	1.092	1.121
VENTURA	1.037	1.120	1.159
YOLO	1.062	1.197	1.263
YUBA	1.137	1.397	1.544
CALIFORNIA	1.039	1.129	1.172

**Table 56: Technical Availability Factors for Municipal Wastes**

(see text for discussion of zero values).

Biomass Type	Technical Availability Factor			
	2007 (--)	2010 (--)	2017 (--)	2020 (--)
Biosolids Landfilled	0	0	0	0
Biosolids Diverted	0.8	0.8	0.8	0.8
MSW Paper/Cardboard Landfilled	0.5	0.5	0.5	0.5
MSW C&D Lumber Landfilled	0.5	0.5	0.5	0.5
MSW Leaves, Grass, Prunings, Trimmings, Stumps Landfilled	0.5	0.5	0.5	0.5
MSW Other Composite Landfilled	0.5	0.5	0.5	0.5
MSW Food Waste Landfilled	0.5	0.5	0.5	0.5
Total MSW Biomass Diverted	0	0	0	0

**Figure 7: Biomass (gross BDT/y) in Landfilled MSW, 2007**



**Figure 8: Biomass (gross BDT/y) in MSW Diverted from Landfill, 2007**



**Table 57: Gross Biosolids and Biomass in MSW (BDT/yr), 2007**

County Name	Biosolids Generation	Biosolids Landfilled	Biosolids Diverted	Total MSW Biomass Landfilled	Landfilled MSW Components						Est. MSW Biomass Diverted	
					Paper/ Cardboard	C&D Lumber	Leaves, Grass	Prunings & Trimmings	Branches & Stumps	Other Biomass (+Biosolids)		
Alameda	29,800	3,600	26,200	662,000	313,400	140,100	27,860	34,870	2,980	70,000	72,600	650,000
Alpine	-	-	-	1,000	400	200	40	30	-	100	100	1,000
Amador	-	-	-	19,000	9,000	4,000	800	670	90	2,000	2,100	19,000
Butte	2,000	2,000	-	82,000	39,500	17,700	3,510	3,080	380	8,800	9,200	82,000
Calaveras	-	-	-	21,000	9,400	4,200	830	2,740	90	2,100	2,200	19,000
Colusa	-	-	-	10,000	4,200	1,900	380	1,100	40	900	1,000	9,000
Contra Costa	26,200	8,700	17,400	480,000	189,000	84,500	16,800	102,210	1,800	42,200	43,800	392,000
Del Norte	400	-	400	8,000	3,800	1,700	340	280	40	900	900	8,000
El Dorado	2,400	200	2,200	71,000	34,000	15,200	3,030	2,560	320	7,600	7,900	71,000
Fresno	17,800	-	17,800	344,000	165,900	74,200	14,750	12,180	1,580	37,100	38,500	344,000
Glenn	500	-	500	9,000	4,300	1,900	380	560	40	1,000	1,000	9,000
Humboldt	1,200	-	1,200	43,000	20,600	9,200	1,830	1,530	200	4,600	4,800	43,000
Imperial	3,000	-	3,000	115,000	52,800	23,600	4,690	9,620	500	11,800	12,200	110,000
Inyo	-	-	-	14,000	3,600	1,600	320	6,930	30	800	800	7,000
Kern	15,900	-	15,900	345,000	166,300	74,300	14,780	12,270	1,580	37,200	38,500	345,000
Kings	2,200	-	2,200	48,000	23,300	10,400	2,070	1,700	220	5,200	5,400	48,000
Lake	500	-	500	22,000	10,700	4,800	950	790	100	2,400	2,500	22,000
Lassen	300	300	-	10,000	4,800	2,100	430	350	50	1,100	1,100	10,000
Los Angeles	250,000	36,900	213,100	5,045,000	2,269,900	1,014,600	201,770	503,970	21,620	507,300	526,000	4,707,000
Madera	1,000	-	1,000	69,000	30,400	13,600	2,700	8,000	290	6,800	7,000	63,000
Marin	3,900	-	3,900	118,000	45,900	20,500	4,080	26,230	440	10,300	10,600	95,000
Mariposa	200	-	200	6,000	3,100	1,400	280	230	30	700	700	6,000
Mendocino	1,300	-	1,300	32,000	15,500	6,900	1,380	1,160	150	3,500	3,600	32,000
Merced	2,300	-	2,300	115,000	53,300	23,800	4,740	8,360	510	11,900	12,400	111,000
Modoc	-	-	-	3,000	1,300	600	110	90	10	300	300	3,000
Mono	-	-	-	16,000	7,600	3,400	670	1,250	70	1,700	1,800	16,000
Monterey	5,700	1,500	4,200	176,000	84,700	37,900	7,530	6,180	810	18,900	19,600	176,000
Napa	2,200	-	2,200	71,000	33,300	14,900	2,960	4,850	320	7,400	7,700	69,000
Nevada	3,200	1,900	1,300	34,000	16,200	7,200	1,440	1,190	150	3,600	3,800	34,000
Orange	61,200	6,200	55,000	1,935,000	739,600	330,600	65,740	455,320	7,040	165,300	171,400	1,534,000
Placer	3,200	3,200	-	131,000	63,200	28,300	5,620	4,720	600	14,100	14,700	131,000
Plumas	200	-	200	10,000	4,700	2,100	420	340	40	1,000	1,100	10,000
Riverside	50,100	-	50,100	1,164,000	478,100	213,700	42,490	207,460	4,550	106,800	110,800	991,000
Sacramento	12,700	-	12,700	698,000	303,300	135,600	26,960	91,630	2,890	67,800	70,300	629,000
San Benito	2,300	-	2,300	23,000	11,200	5,000	1,000	820	110	2,500	2,600	23,000
San Bernardino	34,900	1,000	33,900	1,044,000	436,200	195,000	38,770	171,610	4,150	97,500	101,100	905,000
San Diego	65,700	700	65,000	1,713,000	750,200	335,300	66,690	212,480	7,140	167,700	173,900	1,556,000
San Francisco	21,200	21,200	-	289,000	131,500	58,800	11,690	25,970	1,250	29,400	30,500	273,000
San Joaquin	8,800	-	8,800	341,000	148,600	66,400	13,210	43,350	1,420	33,200	34,400	308,000
San Luis Obispo	4,500	-	4,500	108,000	51,900	23,200	4,610	3,790	490	11,600	12,000	108,000
San Mateo	12,100	10,400	1,700	293,000	136,600	61,000	12,140	19,910	1,300	30,500	31,600	283,000
Santa Barbara	7,400	-	7,400	184,000	83,600	37,300	7,430	17,160	800	18,700	19,400	173,000
Santa Clara	83,800	4,000	79,800	631,000	284,600	127,200	25,300	61,170	2,710	63,600	66,000	590,000
Santa Cruz	4,600	4,600	-	87,000	41,800	18,700	3,710	3,400	400	9,300	9,700	87,000
Shasta	4,100	1,800	2,300	74,000	35,500	15,900	3,160	2,590	340	7,900	8,200	74,000
Sierra	-	-	-	1,000	700	300	60	50	10	200	200	1,000
Siskiyou	200	-	200	14,000	6,900	3,100	610	500	70	1,500	1,600	14,000
Solano	10,400	6,000	4,400	204,000	88,000	39,300	7,820	27,470	840	19,700	20,400	183,000
Sonoma	6,900	4,500	2,400	200,000	94,300	42,200	8,380	10,960	900	21,100	21,900	196,000
Stanislaus	15,300	-	15,300	236,000	113,900	50,900	10,130	8,320	1,080	25,500	26,400	236,000
Sutter	1,500	-	1,500	28,000	13,200	5,900	1,170	1,170	130	2,900	3,100	27,000
Tehama	700	-	700	21,000	10,300	4,600	920	750	100	2,300	2,400	21,000
Trinity	-	-	-	3,000	1,600	700	140	120	20	400	400	3,000
Tulare	9,500	-	9,500	174,000	83,800	37,400	7,440	6,120	800	18,700	19,400	174,000
Tuolumne	800	-	800	19,000	9,300	4,100	820	680	90	2,100	2,100	19,000
Ventura	22,100	4,000	18,000	424,000	194,800	87,100	17,310	34,740	1,850	43,500	45,100	404,000
Yolo	3,400	300	3,100	87,000	39,400	17,600	3,500	8,200	380	8,800	9,100	82,000
Yuba	1,100	-	1,100	28,000	13,200	5,900	1,170	1,170	130	2,900	3,100	27,000
Other- not located	-	-	-	-	-	-	-	-	-	-	-	-
STATE TOTALS	821,000	123,000	698,000	18,300,000	8,000,000	3,600,000	710,000	2,180,000	76,000	1,800,000	1,900,000	16,600,000

**Table 58: Technical Biosolids and Biomass in MSW (BDT/yr), 2007**

County Name	Biosolids	Biosolids	Biosolids	Total MSW	Landfilled MSW Components					Est. MSW		
	Generation	Landfilled	Diverted	Biomass Landfilled	Paper/Card board	C&D Lumber	Leaves, Grass	Prunings & Trimmings	Branches & Stumps	Other Biomass (+Biosolids)	Food Waste	Biomass Diverted
Alameda	21,000	-	21,000	330,905	156,700	70,050	13,930	17,435	1,490	35,000	36,300	-
Alpine	-	-	-	435	200	100	20	15	-	50	50	-
Amador	-	-	-	9,330	4,500	2,000	400	335	45	1,000	1,050	-
Butte	-	-	-	41,085	19,750	8,850	1,755	1,540	190	4,400	4,600	-
Calaveras	-	-	-	10,780	4,700	2,100	415	1,370	45	1,050	1,100	-
Colusa	-	-	-	4,760	2,100	950	190	550	20	450	500	-
Contra Costa	13,900	-	13,900	240,155	94,500	42,250	8,400	51,105	900	21,100	21,900	-
Del Norte	300	-	300	3,980	1,900	850	170	140	20	450	450	-
El Dorado	1,800	-	1,800	35,305	17,000	7,600	1,515	1,280	160	3,800	3,950	-
Fresno	14,200	-	14,200	172,105	82,950	37,100	7,375	6,090	790	18,550	19,250	-
Glenn	400	-	400	4,590	2,150	950	190	280	20	500	500	-
Humboldt	1,000	-	1,000	21,380	10,300	4,600	915	765	100	2,300	2,400	-
Imperial	2,400	-	2,400	57,605	26,400	11,800	2,345	4,810	250	5,900	6,100	-
Inyo	-	-	-	7,040	1,800	800	160	3,465	15	400	400	-
Kern	12,700	-	12,700	172,465	83,150	37,150	7,390	6,135	790	18,600	19,250	-
Kings	1,800	-	1,800	24,145	11,650	5,200	1,035	850	110	2,600	2,700	-
Lake	400	-	400	11,120	5,350	2,400	475	395	50	1,200	1,250	-
Lassen	-	-	-	4,965	2,400	1,050	215	175	25	550	550	-
Los Angeles	170,500	-	170,500	2,522,580	1,134,950	507,300	100,885	251,985	10,810	253,650	263,000	-
Madera	800	-	800	34,395	15,200	6,800	1,350	4,000	145	3,400	3,500	-
Marin	3,100	-	3,100	59,025	22,950	10,250	2,040	13,115	220	5,150	5,300	-
Mariposa	200	-	200	3,220	1,550	700	140	115	15	350	350	-
Mendocino	1,000	-	1,000	16,095	7,750	3,450	690	580	75	1,750	1,800	-
Merced	1,800	-	1,800	57,505	26,650	11,900	2,370	4,180	255	5,950	6,200	-
Modoc	-	-	-	1,355	650	300	55	45	5	150	150	-
Mono	-	-	-	8,245	3,800	1,700	335	625	35	850	900	-
Monterey	3,400	-	3,400	87,810	42,350	18,950	3,765	3,090	405	9,450	9,800	-
Napa	1,800	-	1,800	35,715	16,650	7,450	1,480	2,425	160	3,700	3,850	-
Nevada	1,000	-	1,000	16,790	8,100	3,600	720	595	75	1,800	1,900	-
Orange	44,000	-	44,000	967,500	369,800	165,300	32,870	227,660	3,520	82,650	85,700	-
Placer	-	-	-	65,620	31,600	14,150	2,810	2,360	300	7,050	7,350	-
Plumas	200	-	200	4,850	2,350	1,050	210	170	20	500	550	-
Riverside	40,100	-	40,100	581,950	239,050	106,850	21,245	103,730	2,275	53,400	55,400	-
Sacramento	10,200	-	10,200	349,240	151,650	67,800	13,480	45,815	1,445	33,900	35,150	-
San Benito	1,800	-	1,800	11,615	5,600	2,500	500	410	55	1,250	1,300	-
San Bernardino	27,100	-	27,100	522,165	218,100	97,500	19,385	85,805	2,075	48,750	50,550	-
San Diego	52,000	-	52,000	856,705	375,100	167,650	33,345	106,240	3,570	83,850	86,950	-
San Francisco	-	-	-	144,555	65,750	29,400	5,845	12,985	625	14,700	15,250	-
San Joaquin	7,000	-	7,000	170,290	74,300	33,200	6,605	21,675	710	16,600	17,200	-
San Luis Obispo	3,600	-	3,600	53,795	25,950	11,600	2,305	1,895	245	5,800	6,000	-
San Mateo	1,400	-	1,400	146,525	68,300	30,500	6,070	9,955	650	15,250	15,800	-
Santa Barbara	5,900	-	5,900	92,195	41,800	18,650	3,715	8,580	400	9,350	9,700	-
Santa Clara	63,800	-	63,800	315,290	142,300	63,600	12,650	30,585	1,355	31,800	33,000	-
Santa Cruz	-	-	-	43,505	20,900	9,350	1,855	1,700	200	4,650	4,850	-
Shasta	1,800	-	1,800	36,795	17,750	7,950	1,580	1,295	170	3,950	4,100	-
Sierra	-	-	-	760	350	150	30	25	5	100	100	-
Siskiyou	200	-	200	7,140	3,450	1,550	305	250	35	750	800	-
Solano	3,500	-	3,500	101,765	44,000	19,650	3,910	13,735	420	9,850	10,200	-
Sonoma	1,900	-	1,900	99,870	47,150	21,100	4,190	5,480	450	10,550	10,950	-
Stanislaus	12,200	-	12,200	118,115	56,950	25,450	5,065	4,160	540	12,750	13,200	-
Sutter	1,200	-	1,200	13,785	6,600	2,950	585	585	65	1,450	1,550	-
Tehama	600	-	600	10,685	5,150	2,300	460	375	50	1,150	1,200	-
Trinity	-	-	-	1,690	800	350	70	60	10	200	200	-
Tulare	7,600	-	7,600	86,830	41,900	18,700	3,720	3,060	400	9,350	9,700	-
Tuolumne	600	-	600	9,595	4,650	2,050	410	340	45	1,050	1,050	-
Ventura	14,400	-	14,400	212,200	97,400	43,550	8,655	17,370	925	21,750	22,550	-
Yolo	2,500	-	2,500	43,490	19,700	8,800	1,750	4,100	190	4,400	4,550	-
Yuba	900	-	900	13,785	6,600	2,950	585	585	65	1,450	1,550	-
Other- not located	-	-	-	-	-	-	-	-	-	-	-	-
STATE TOTALS	558,400	-	558,400	9,077,190	3,993,100	1,784,800	354,930	1,088,475	38,035	892,350	925,500	-

**Table 59: Gross Biosolids and Biomass in MSW (BDT/yr), 2010**

County Name	Biosolids	Biosolids	Biosolids	Total MSW	Landfilled MSW Components					Est. MSW		
	Generation	Landfilled	Diverted	Biomass Landfilled	Paper/ Cardboard	C&D Lumber	Leaves, Grass	Prunings & Trimmings	Branches & Stumps	Other Biomass (+Biosolids)	Food Waste	Biomass Diverted
Alameda	30,270	3,660	26,610	672,200	318,300	142,300	28,300	35,420	3,030	71,100	73,700	660,200
Alpine	-	-	-	900	400	200	40	30	-	110	100	1,100
Amador	-	-	-	19,900	9,600	4,300	850	710	100	2,130	2,200	20,300
Butte	2,140	2,140	-	87,800	42,200	18,900	3,750	3,290	410	9,410	9,800	87,700
Calaveras	-	-	-	22,800	10,000	4,400	880	2,900	100	2,220	2,300	20,100
Colusa	-	-	-	10,900	4,800	2,200	430	1,250	50	1,020	1,100	10,200
Contra Costa	27,560	9,190	18,370	507,000	199,500	89,200	17,740	107,910	1,900	44,550	46,200	413,900
Del Norte	430	-	430	8,500	4,000	1,800	360	300	40	960	1,000	8,500
El Dorado	2,620	220	2,400	77,000	37,100	16,600	3,310	2,790	350	8,290	8,600	77,500
Fresno	19,810	-	19,810	383,000	184,600	82,600	16,420	13,560	1,760	41,290	42,800	382,900
Glenn	550	-	550	10,100	4,700	2,100	420	610	40	1,090	1,100	9,800
Humboldt	1,230	-	1,230	43,600	21,000	9,400	1,870	1,560	200	4,700	4,900	43,900
Imperial	3,520	-	3,520	135,200	62,000	27,700	5,500	11,290	590	13,850	14,300	129,100
Inyo	-	-	-	14,500	3,700	1,700	330	7,150	30	830	800	7,200
Kern	18,290	-	18,290	396,800	191,300	85,500	17,000	14,110	1,820	42,790	44,300	396,800
Kings	2,490	-	2,490	54,700	26,400	11,800	2,350	1,930	250	5,900	6,100	54,400
Lake	530	-	530	23,500	11,300	5,100	1,010	840	110	2,540	2,600	23,300
Lassen	320	320	-	10,700	5,100	2,300	460	380	50	1,180	1,200	10,700
Los Angeles	258,560	38,160	220,400	5,218,100	2,347,700	1,049,400	208,680	521,230	22,360	524,680	544,000	4,868,200
Madera	1,150	-	1,150	79,300	35,000	15,700	3,110	9,210	330	7,830	8,100	72,600
Marin	3,930	-	3,930	119,000	46,200	20,700	4,110	26,420	440	10,380	10,700	95,700
Mariposa	210	-	210	6,800	3,300	1,500	300	240	30	740	700	6,300
Mendocino	1,340	-	1,340	33,200	16,000	7,100	1,420	1,200	150	3,610	3,700	33,000
Merced	2,610	-	2,610	130,500	60,500	27,000	5,380	9,480	580	13,500	14,100	125,900
Modoc	-	-	-	3,000	1,400	700	120	100	10	330	300	3,300
Mono	-	-	-	18,000	8,300	3,700	730	1,370	80	1,860	2,000	17,500
Monterey	5,820	1,530	4,290	179,600	86,600	38,800	7,700	6,320	830	19,330	20,000	180,000
Napa	2,360	-	2,360	76,700	35,700	16,000	3,180	5,210	340	7,940	8,300	74,100
Nevada	3,300	1,960	1,340	34,600	16,700	7,400	1,490	1,230	150	3,710	3,900	35,100
Orange	64,830	6,570	58,260	2,049,800	783,500	350,200	69,640	482,330	7,460	175,110	181,600	1,625,000
Placer	3,610	3,610	-	147,900	71,200	31,900	6,330	5,320	680	15,890	16,600	147,600
Plumas	200	-	200	9,800	4,800	2,100	430	350	40	1,020	1,100	10,200
Riverside	59,410	-	59,410	1,380,100	566,900	253,400	50,380	245,990	5,400	126,640	131,400	1,175,100
Sacramento	13,490	-	13,490	741,800	322,100	144,000	28,640	97,320	3,070	72,010	74,700	668,100
San Benito	2,580	-	2,580	26,000	12,500	5,600	1,120	920	120	2,800	2,900	25,800
San Bernardino	38,960	1,120	37,840	1,165,800	486,900	217,700	43,280	191,560	4,630	108,830	112,900	1,010,200
San Diego	69,170	740	68,430	1,803,900	789,800	353,000	70,210	223,700	7,520	176,550	183,100	1,638,100
San Francisco	21,870	21,870	-	298,400	135,700	60,700	12,060	26,800	1,290	30,330	31,500	281,700
San Joaquin	9,960	-	9,960	385,300	168,100	75,100	14,950	49,050	1,610	37,560	38,900	348,500
San Luis Obispo	4,650	-	4,650	111,100	53,600	23,900	4,760	3,910	510	11,970	12,400	111,500
San Mateo	12,390	10,650	1,740	299,900	139,800	62,400	12,430	20,380	1,330	31,220	32,300	289,700
Santa Barbara	7,690	-	7,690	191,700	86,900	38,800	7,720	17,840	830	19,440	20,200	179,800
Santa Clara	87,850	4,190	83,660	661,100	298,400	133,300	26,520	64,130	2,840	66,670	69,200	618,500
Santa Cruz	4,740	4,740	-	89,600	43,000	19,300	3,820	3,500	410	9,570	10,000	89,600
Shasta	4,370	1,920	2,450	78,500	37,900	17,000	3,370	2,760	360	8,430	8,700	79,000
Sierra	-	-	-	1,500	700	300	60	50	10	210	200	1,000
Siskiyou	200	-	200	14,700	7,100	3,200	630	510	70	1,540	1,600	14,300
Solano	10,920	6,300	4,620	213,500	92,300	41,200	8,210	28,830	880	20,670	21,400	192,000
Sonoma	7,160	4,670	2,490	207,200	97,800	43,800	8,690	11,370	930	21,880	22,700	203,300
Stanislaus	16,950	-	16,950	261,700	126,200	56,400	11,220	9,210	1,200	28,240	29,200	261,400
Sutter	1,720	-	1,720	31,700	15,100	6,800	1,340	1,340	150	3,330	3,600	31,000
Tehama	760	-	760	23,100	11,100	5,000	990	810	110	2,480	2,600	22,700
Trinity	-	-	-	3,600	1,700	800	150	130	20	440	400	3,300
Tulare	10,770	-	10,770	196,900	95,000	42,400	8,440	6,940	910	21,210	22,000	197,300
Tuolumne	820	-	820	19,600	9,500	4,200	840	690	90	2,140	2,100	19,400
Ventura	23,220	4,220	19,000	447,900	205,600	91,900	18,270	36,670	1,950	45,920	47,600	426,500
Yolo	3,740	330	3,410	95,600	43,300	19,300	3,850	9,010	420	9,670	10,000	90,100
Yuba	1,310	-	1,310	32,800	15,700	7,000	1,400	1,400	160	3,460	3,700	32,200
Other- not located	-	-	-	-	-	-	-	-	-	-	-	-
STATE TOTALS	872,000	128,000	744,000	19,400,000	8,520,000	3,810,000	760,000	2,330,000	80,000	1,900,000	1,970,000	17,700,000

**Table 60: Technical Biosolids and Biomass in MSW (BDT/yr), 2010**

County Name	Biosolids	Biosolids	Biosolids	Total MSW	Landfilled MSW Components					Est. MSW		
	Generation	Landfilled	Diverted	Biomass Landfilled	Paper/ Cardboard	C&D Lumber	Leaves, Grass	Prunings & Trimmings	Branches & Stumps	Other Biomass (+Biosolids)	Food Waste	Biomass Diverted
Alameda	21,300	-	21,300	336,075	159,150	71,150	14,150	17,710	1,515	35,550	36,850	-
Alpine	-	-	-	440	200	100	20	15	-	55	50	-
Amador	-	-	-	9,945	4,800	2,150	425	355	50	1,065	1,100	-
Butte	-	-	-	43,880	21,100	9,450	1,875	1,645	205	4,705	4,900	-
Calaveras	-	-	-	11,400	5,000	2,200	440	1,450	50	1,110	1,150	-
Colusa	-	-	-	5,425	2,400	1,100	215	625	25	510	550	-
Contra Costa	14,700	-	14,700	253,500	99,750	44,600	8,870	53,955	950	22,275	23,100	-
Del Norte	300	-	300	4,230	2,000	900	180	150	20	480	500	-
El Dorado	1,900	-	1,900	38,520	18,550	8,300	1,655	1,395	175	4,145	4,300	-
Fresno	15,800	-	15,800	191,515	92,300	41,300	8,210	6,780	880	20,645	21,400	-
Glenn	400	-	400	5,030	2,350	1,050	210	305	20	545	550	-
Humboldt	1,000	-	1,000	21,815	10,500	4,700	935	780	100	2,350	2,450	-
Imperial	2,800	-	2,800	67,615	31,000	13,850	2,750	5,645	295	6,925	7,150	-
Inyo	-	-	-	7,270	1,850	850	165	3,575	15	415	400	-
Kern	14,600	-	14,600	198,410	95,650	42,750	8,500	7,055	910	21,395	22,150	-
Kings	2,000	-	2,000	27,365	13,200	5,900	1,175	965	125	2,950	3,050	-
Lake	400	-	400	11,750	5,650	2,550	505	420	55	1,270	1,300	-
Lassen	-	-	-	5,335	2,550	1,150	230	190	25	590	600	-
Los Angeles	176,300	-	176,300	2,609,025	1,173,850	524,700	104,340	260,615	11,180	262,340	272,000	-
Madera	900	-	900	39,640	17,500	7,850	1,555	4,605	165	3,915	4,050	-
Marin	3,100	-	3,100	59,475	23,100	10,350	2,055	13,210	220	5,190	5,350	-
Mariposa	200	-	200	3,405	1,650	750	150	120	15	370	350	-
Mendocino	1,100	-	1,100	16,590	8,000	3,550	710	600	75	1,805	1,850	-
Merced	2,100	-	2,100	65,270	30,250	13,500	2,690	4,740	290	6,750	7,050	-
Modoc	-	-	-	1,480	700	350	60	50	5	165	150	-
Mono	-	-	-	9,020	4,150	1,850	365	685	40	930	1,000	-
Monterey	3,400	-	3,400	89,790	43,300	19,400	3,850	3,160	415	9,665	10,000	-
Napa	1,900	-	1,900	38,335	17,850	8,000	1,590	2,605	170	3,970	4,150	-
Nevada	1,100	-	1,100	17,290	8,350	3,700	745	615	75	1,855	1,950	-
Orange	46,600	-	46,600	1,024,920	391,750	175,100	34,820	241,165	3,730	87,555	90,800	-
Placer	-	-	-	73,960	35,600	15,950	3,165	2,660	340	7,945	8,300	-
Plumas	200	-	200	4,920	2,400	1,050	215	175	20	510	550	-
Riverside	47,500	-	47,500	690,055	283,450	126,700	25,190	122,995	2,700	63,320	65,700	-
Sacramento	10,800	-	10,800	370,920	161,050	72,000	14,320	48,660	1,535	36,005	37,350	-
San Benito	2,100	-	2,100	12,980	6,250	2,800	560	460	60	1,400	1,450	-
San Bernardino	30,300	-	30,300	582,900	243,450	108,850	21,640	95,780	2,315	54,415	56,450	-
San Diego	54,700	-	54,700	901,940	394,900	176,500	35,105	111,850	3,760	88,275	91,550	-
San Francisco	-	-	-	149,190	67,850	30,350	6,030	13,400	645	15,165	15,750	-
San Joaquin	8,000	-	8,000	192,635	84,050	37,550	7,475	24,525	805	18,780	19,450	-
San Luis Obispo	3,700	-	3,700	55,525	26,800	11,950	2,380	1,955	255	5,985	6,200	-
San Mateo	1,400	-	1,400	149,930	69,900	31,200	6,215	10,190	665	15,610	16,150	-
Santa Barbara	6,200	-	6,200	95,865	43,450	19,400	3,860	8,920	415	9,720	10,100	-
Santa Clara	66,900	-	66,900	330,530	149,200	66,650	13,260	32,065	1,420	33,335	34,600	-
Santa Cruz	-	-	-	44,800	21,500	9,650	1,910	1,750	205	4,785	5,000	-
Shasta	2,000	-	2,000	39,260	18,950	8,500	1,685	1,380	180	4,215	4,350	-
Sierra	-	-	-	765	350	150	30	25	5	105	100	-
Siskiyou	200	-	200	7,325	3,550	1,600	315	255	35	770	800	-
Solano	3,700	-	3,700	106,745	46,150	20,600	4,105	14,415	440	10,335	10,700	-
Sonoma	2,000	-	2,000	103,585	48,900	21,900	4,345	5,685	465	10,940	11,350	-
Stanislaus	13,600	-	13,600	130,835	63,100	28,200	5,610	4,605	600	14,120	14,600	-
Sutter	1,400	-	1,400	15,830	7,550	3,400	670	670	75	1,665	1,800	-
Tehama	600	-	600	11,545	5,550	2,500	495	405	55	1,240	1,300	-
Trinity	-	-	-	1,820	850	400	75	65	10	220	200	-
Tulare	8,600	-	8,600	98,450	47,500	21,200	4,220	3,470	455	10,605	11,000	-
Tuolumne	700	-	700	9,780	4,750	2,100	420	345	45	1,070	1,050	-
Ventura	15,200	-	15,200	223,955	102,800	45,950	9,135	18,335	975	22,960	23,800	-
Yolo	2,700	-	2,700	47,775	21,650	9,650	1,925	4,505	210	4,835	5,000	-
Yuba	1,000	-	1,000	16,410	7,850	3,500	700	700	80	1,730	1,850	-
Other- not located	-	-	-	-	-	-	-	-	-	-	-	-
STATE TOTALS	595,000	-	595,400	9,683,990	4,257,800	1,903,400	378,495	1,165,430	40,565	951,550	986,750	-

**Table 61: Gross Biosolids and Biomass in MSW (BDT/yr), 2017**

County Name	Biosolids Generation	Biosolids Landfilled	Biosolids Diverted	Total MSW Biomass Landfilled	Landfilled MSW Components						Est. MSW Biomass Diverted	
					Paper/ Cardboard	C&D Lumber	Leaves, Grass	Prunings & Trimmings	Branches & Stumps	Other Biomass (+Biosolids)	Food Waste	
Alameda	31,800	3,800	28,000	707,000	334,900	149,700	29,800	37,300	3,200	74,800	77,600	695,000
Alpine	-	-	-	1,000	400	200	-	-	-	100	100	1,000
Amador	-	-	-	22,000	10,600	4,700	900	800	100	2,400	2,500	22,000
Butte	2,400	2,400	-	100,000	48,100	21,500	4,300	3,700	500	10,700	11,200	100,000
Calaveras	-	-	-	25,000	11,000	4,900	1,000	3,200	100	2,500	2,600	22,000
Colusa	-	-	-	12,000	5,300	2,400	500	1,400	100	1,100	1,300	11,000
Contra Costa	29,800	9,900	19,900	548,000	215,700	96,400	19,200	116,600	2,100	48,200	50,000	447,000
Del Norte	500	-	500	9,000	4,500	2,000	400	300	-	1,100	1,100	9,000
El Dorado	2,800	200	2,600	83,000	40,100	17,900	3,600	3,000	400	9,000	9,300	84,000
Fresno	21,900	-	21,900	424,000	204,200	91,300	18,200	15,000	1,900	45,700	47,400	423,000
Glenn	600	-	600	11,000	5,300	2,300	500	700	-	1,200	1,200	11,000
Humboldt	1,300	-	1,300	45,000	21,800	9,700	1,900	1,600	200	4,900	5,100	46,000
Imperial	3,900	-	3,900	148,000	67,800	30,300	6,000	12,400	600	15,200	15,700	141,000
Inyo	-	-	-	15,000	3,900	1,700	300	7,500	-	900	900	8,000
Kern	20,100	-	20,100	436,000	210,100	93,900	18,700	15,500	2,000	47,000	48,600	436,000
Kings	2,800	-	2,800	61,000	29,500	13,200	2,600	2,200	300	6,600	6,800	61,000
Lake	600	-	600	26,000	12,400	5,600	1,100	900	100	2,800	2,900	26,000
Lassen	300	300	-	11,000	5,400	2,400	500	400	100	1,200	1,200	11,000
Los Angeles	266,300	39,300	227,000	5,373,000	2,417,600	1,080,600	214,900	536,800	23,000	540,300	560,200	5,013,000
Madera	1,300	-	1,300	91,000	40,100	17,900	3,600	10,500	400	9,000	9,200	83,000
Marin	4,000	-	4,000	120,000	46,500	20,800	4,100	26,600	400	10,400	10,700	96,000
Mariposa	200	-	200	7,000	3,500	1,600	300	300	-	800	800	7,000
Mendocino	1,400	-	1,400	35,000	17,000	7,600	1,500	1,300	200	3,800	4,000	35,000
Merced	3,000	-	3,000	148,000	68,500	30,600	6,100	10,700	700	15,300	15,900	143,000
Modoc	-	-	-	3,000	1,600	800	100	100	-	400	400	4,000
Mono	-	-	-	20,000	9,300	4,100	800	1,500	100	2,100	2,200	19,000
Monterey	6,200	1,600	4,600	192,000	92,400	41,300	8,200	6,700	900	20,600	21,400	192,000
Napa	2,600	-	2,600	83,000	38,800	17,400	3,400	5,600	400	8,600	9,000	80,000
Nevada	3,500	2,100	1,400	37,000	18,000	8,000	1,600	1,300	200	4,000	4,200	38,000
Orange	67,500	6,800	60,700	2,135,000	816,000	364,700	72,500	502,300	7,800	182,400	189,100	1,692,000
Placer	4,000	4,000	-	163,000	78,300	35,100	7,000	5,800	700	17,500	18,200	162,000
Plumas	200	-	200	10,000	5,000	2,200	400	400	-	1,100	1,200	11,000
Riverside	66,000	-	66,000	1,532,000	629,500	281,400	55,900	273,100	6,000	140,600	145,900	1,305,000
Sacramento	14,200	-	14,200	779,000	338,400	151,300	30,100	102,200	3,200	75,700	78,400	702,000
San Benito	3,100	-	3,100	31,000	14,900	6,700	1,300	1,100	100	3,300	3,500	31,000
San Bernardino	42,000	1,200	40,800	1,257,000	525,200	234,800	46,700	206,600	5,000	117,400	121,700	1,090,000
San Diego	73,000	800	72,200	1,903,000	833,100	372,400	74,100	236,000	7,900	186,200	193,100	1,728,000
San Francisco	21,900	21,900	-	299,000	135,900	60,800	12,100	26,800	1,300	30,400	31,500	282,000
San Joaquin	11,500	-	11,500	446,000	194,600	87,000	17,300	56,800	1,900	43,500	45,000	403,000
San Luis Obispo	4,900	-	4,900	117,000	56,200	25,100	5,000	4,100	500	12,600	13,000	117,000
San Mateo	12,400	10,700	1,700	302,000	140,600	62,800	12,500	20,500	1,300	31,400	32,500	291,000
Santa Barbara	7,900	-	7,900	196,000	88,900	39,600	7,900	18,200	900	19,900	20,600	184,000
Santa Clara	90,300	4,300	86,000	680,000	306,700	137,100	27,300	65,900	2,900	68,500	71,100	636,000
Santa Cruz	4,900	4,900	-	93,000	44,600	20,000	4,000	3,600	400	9,900	10,400	93,000
Shasta	4,800	2,100	2,700	87,000	41,800	18,700	3,700	3,100	400	9,300	9,700	87,000
Sierra	-	-	-	2,000	700	300	100	100	-	200	200	1,000
Siskiyou	200	-	200	16,000	7,500	3,400	700	500	100	1,600	1,700	15,000
Solano	11,800	6,800	5,000	232,000	100,200	44,800	8,900	31,300	1,000	22,400	23,200	208,000
Sonoma	7,600	5,000	2,600	220,000	103,900	46,500	9,200	12,100	1,000	23,200	24,100	216,000
Stanislaus	19,200	-	19,200	296,000	142,700	63,800	12,700	10,400	1,400	32,000	33,100	296,000
Sutter	2,100	-	2,100	38,000	18,100	8,100	1,600	1,600	200	4,000	4,200	37,000
Tehama	800	-	800	26,000	12,500	5,600	1,100	900	100	2,800	2,900	25,000
Trinity	-	-	-	4,000	1,900	800	200	100	-	500	500	4,000
Tulare	12,300	-	12,300	225,000	108,300	48,400	9,600	7,900	1,000	24,200	25,100	225,000
Tuolumne	900	-	900	21,000	10,200	4,500	900	700	100	2,300	2,300	21,000
Ventura	24,700	4,500	20,200	475,000	218,100	97,500	19,400	38,900	2,100	48,700	50,500	452,000
Yolo	4,100	400	3,700	104,000	47,200	21,100	4,200	9,800	500	10,500	10,900	98,000
Yuba	1,500	-	1,500	38,000	18,400	8,200	1,600	1,600	200	4,100	4,300	38,000
Other- not located	-	-	-	-	-	-	-	-	-	-	-	-
STATE TOTALS	921,100	133,000	788,100	20,500,000	9,023,700	4,033,500	802,100	2,466,300	86,000	2,016,900	2,091,400	18,700,000

**Table 62: Technical Biosolids and Biomass in MSW (BDT/yr), 2017**

County Name	Biosolids Generation	Biosolids Landfilled	Biosolids Diverted	Total MSW Biomass Landfilled	Landfilled MSW Components						Est. MSW Biomass Diverted
					Paper/ Cardboard	C&D Lumber	Leaves, Grass	Prunings & Trimmings	Branches & Stumps	Other Biomass (+Biosolids)	
Alameda	22,400	-	22,400	353,650	167,450	74,850	14,900	18,650	1,600	37,400	38,800
Alpine	-	-	-	400	200	100	-	-	-	50	50
Amador	-	-	-	11,000	5,300	2,350	450	400	50	1,200	1,250
Butte	-	-	-	50,000	24,050	10,750	2,150	1,850	250	5,350	5,600
Calaveras	-	-	-	12,650	5,500	2,450	500	1,600	50	1,250	1,300
Colusa	-	-	-	6,050	2,650	1,200	250	700	50	550	650
Contra Costa	15,900	-	15,900	274,100	107,850	48,200	9,600	58,300	1,050	24,100	25,000
Del Norte	400	-	400	4,700	2,250	1,000	200	150	-	550	550
El Dorado	2,100	-	2,100	41,650	20,050	8,950	1,800	1,500	200	4,500	4,650
Fresno	17,500	-	17,500	211,850	102,100	45,650	9,100	7,500	950	22,850	23,700
Glenn	500	-	500	5,600	2,650	1,150	250	350	-	600	600
Humboldt	1,000	-	1,000	22,600	10,900	4,850	950	800	100	2,450	2,550
Imperial	3,100	-	3,100	74,000	33,900	15,150	3,000	6,200	300	7,600	7,850
Inyo	-	-	-	7,600	1,950	850	150	3,750	-	450	450
Kern	16,100	-	16,100	217,900	105,050	46,950	9,350	7,750	1,000	23,500	24,300
Kings	2,200	-	2,200	30,600	14,750	6,600	1,300	1,100	150	3,300	3,400
Lake	500	-	500	12,900	6,200	2,800	550	450	50	1,400	1,450
Lassen	-	-	-	5,600	2,700	1,200	250	200	50	600	600
Los Angeles	181,600	-	181,600	2,686,700	1,208,800	540,300	107,450	268,400	11,500	270,150	280,100
Madera	1,000	-	1,000	45,350	20,050	8,950	1,800	5,250	200	4,500	4,600
Marin	3,200	-	3,200	59,750	23,250	10,400	2,050	13,300	200	5,200	5,350
Mariposa	200	-	200	3,650	1,750	800	150	150	-	400	400
Mendocino	1,100	-	1,100	17,700	8,500	3,800	750	650	100	1,900	2,000
Merced	2,400	-	2,400	73,900	34,250	15,300	3,050	5,350	350	7,650	7,950
Modoc	-	-	-	1,700	800	400	50	50	-	200	200
Mono	-	-	-	10,050	4,650	2,050	400	750	50	1,050	1,100
Monterey	3,700	-	3,700	95,750	46,200	20,650	4,100	3,350	450	10,300	10,700
Napa	2,100	-	2,100	41,600	19,400	8,700	1,700	2,800	200	4,300	4,500
Nevada	1,100	-	1,100	18,650	9,000	4,000	800	650	100	2,000	2,100
Orange	48,600	-	48,600	1,067,400	408,000	182,350	36,250	251,150	3,900	91,200	94,550
Placer	-	-	-	81,300	39,150	17,550	3,500	2,900	350	8,750	9,100
Plumas	200	-	200	5,150	2,500	1,100	200	200	-	550	600
Riverside	52,800	-	52,800	766,200	314,750	140,700	27,950	136,550	3,000	70,300	72,950
Sacramento	11,400	-	11,400	389,650	169,200	75,650	15,050	51,100	1,600	37,850	39,200
San Benito	2,500	-	2,500	15,450	7,450	3,350	650	550	50	1,650	1,750
San Bernardino	32,600	-	32,600	628,700	262,600	117,400	23,350	103,300	2,500	58,700	60,850
San Diego	57,800	-	57,800	951,400	416,550	186,200	37,050	118,000	3,950	93,100	96,550
San Francisco	-	-	-	149,400	67,950	30,400	6,050	13,400	650	15,200	15,750
San Joaquin	9,200	-	9,200	223,050	97,300	43,500	8,650	28,400	950	21,750	22,500
San Luis Obispo	3,900	-	3,900	58,250	28,100	12,550	2,500	2,050	250	6,300	6,500
San Mateo	1,400	-	1,400	150,800	70,300	31,400	6,250	10,250	650	15,700	16,250
Santa Barbara	6,300	-	6,300	98,000	44,450	19,800	3,950	9,100	450	9,950	10,300
Santa Clara	68,800	-	68,800	339,750	153,350	68,550	13,650	32,950	1,450	34,250	35,550
Santa Cruz	-	-	-	46,450	22,300	10,000	2,000	1,800	200	4,950	5,200
Shasta	2,200	-	2,200	43,350	20,900	9,350	1,850	1,550	200	4,650	4,850
Sierra	-	-	-	800	350	150	50	50	-	100	100
Siskiyou	200	-	200	7,750	3,750	1,700	350	250	50	800	850
Solano	4,000	-	4,000	115,900	50,100	22,400	4,450	15,650	500	11,200	11,600
Sonoma	2,100	-	2,100	110,000	51,950	23,250	4,600	6,050	500	11,600	12,050
Stanislaus	15,400	-	15,400	148,050	71,350	31,900	6,350	5,200	700	16,000	16,550
Sutter	1,700	-	1,700	18,900	9,050	4,050	800	800	100	2,000	2,100
Tehama	600	-	600	12,950	6,250	2,800	550	450	50	1,400	1,450
Trinity	-	-	-	2,000	950	400	100	50	-	250	250
Tulare	9,800	-	9,800	112,250	54,150	24,200	4,800	3,950	500	12,100	12,550
Tuolumne	700	-	700	10,500	5,100	2,250	450	350	50	1,150	1,150
Ventura	16,200	-	16,200	237,600	109,050	48,750	9,700	19,450	1,050	24,350	25,250
Yolo	3,000	-	3,000	52,100	23,600	10,550	2,100	4,900	250	5,250	5,450
Yuba	1,200	-	1,200	19,200	9,200	4,100	800	800	100	2,050	2,150
Other- not located	-	-	-	-	-	-	-	-	-	-	-
STATE TOTALS	631,000	-	631,000	10,259,950	4,511,850	2,016,750	401,050	1,233,150	43,000	1,008,450	1,045,700

**Table 63: Gross Biosolids and Biomass in MSW (BDT/yr), 2020**

County Name	Biosolids Generation	Biosolids Landfilled	Biosolids Diverted	Total MSW Biomass Landfilled	Landfilled MSW Components						Est. MSW Biomass Diverted	
					Paper/ Cardboard	C&D Lumber	Leaves, Grass	Prunings & Trimmings	Branches & Stumps	Other Biomass (+Biosolids)		
Alameda	32,500	3,900	28,600	721,300	341,600	152,700	30,400	38,000	3,200	76,300	79,100	708,500
Alpine	-	-	-	900	500	200	-	-	-	100	100	1,200
Amador	-	-	-	23,100	11,100	5,000	1,000	800	100	2,500	2,600	23,500
Butte	2,600	2,600	-	106,100	51,000	22,800	4,500	4,000	500	11,400	11,900	105,800
Calaveras	-	-	-	26,400	11,500	5,100	1,000	3,400	100	2,600	2,700	23,200
Colusa	-	-	-	12,900	5,700	2,600	500	1,500	100	1,200	1,300	12,100
Contra Costa	31,000	10,300	20,700	570,200	224,400	100,300	19,900	121,400	2,100	50,100	52,000	465,400
Del Norte	500	-	500	9,700	4,700	2,100	400	300	-	1,100	1,100	9,800
El Dorado	2,900	200	2,700	87,500	42,100	18,800	3,800	3,200	400	9,400	9,800	87,900
Fresno	23,300	-	23,300	450,900	217,300	97,200	19,300	16,000	2,100	48,600	50,400	450,600
Glenn	700	-	700	12,000	5,600	2,500	500	700	100	1,300	1,300	11,800
Humboldt	1,300	-	1,300	46,100	22,200	9,900	2,000	1,600	200	5,000	5,200	46,300
Imperial	4,200	-	4,200	159,500	73,100	32,700	6,500	13,300	700	16,300	16,900	152,300
Inyo	-	-	-	15,700	4,000	1,800	400	7,700	-	900	900	7,800
Kern	21,500	-	21,500	467,300	225,300	100,700	20,000	16,600	2,100	50,400	52,200	467,400
Kings	3,000	-	3,000	65,600	31,700	14,100	2,800	2,300	300	7,100	7,300	65,200
Lake	600	-	600	27,000	13,000	5,800	1,200	1,000	100	2,900	3,000	26,700
Lassen	300	300	-	11,600	5,600	2,400	500	400	100	1,300	1,300	11,700
Los Angeles	271,400	40,100	231,300	5,475,900	2,463,700	1,101,200	219,000	547,000	23,500	550,600	570,900	5,109,000
Madera	1,400	-	1,400	98,500	43,500	19,500	3,900	11,500	400	9,700	10,000	90,200
Marin	4,000	-	4,000	120,000	46,700	20,800	4,100	26,700	400	10,500	10,800	96,600
Mariposa	200	-	200	7,600	3,700	1,700	300	300	-	800	800	7,100
Mendocino	1,500	-	1,500	36,500	17,500	7,800	1,600	1,300	200	4,000	4,100	36,200
Merced	3,200	-	3,200	159,500	73,900	33,000	6,600	11,600	700	16,500	17,200	153,900
Modoc	-	-	-	3,600	1,800	800	100	100	-	400	400	4,100
Mono	-	-	-	21,300	9,800	4,400	900	1,600	100	2,200	2,300	20,700
Monterey	6,400	1,700	4,700	196,400	94,800	42,400	8,400	6,900	900	21,100	21,900	196,900
Napa	2,700	-	2,700	87,100	40,600	18,200	3,600	5,900	400	9,000	9,400	84,100
Nevada	3,700	2,200	1,500	38,700	18,600	8,300	1,700	1,400	200	4,100	4,400	39,000
Orange	69,500	7,000	62,500	2,198,700	840,400	375,600	74,700	517,400	8,000	187,800	194,800	1,743,000
Placer	4,200	4,200	-	173,300	83,500	37,400	7,400	6,200	800	18,600	19,400	173,000
Plumas	200	-	200	10,600	5,100	2,300	500	400	-	1,100	1,200	10,900
Riverside	71,600	-	71,600	1,664,200	683,600	305,600	60,800	296,600	6,500	152,700	158,400	1,416,900
Sacramento	14,600	-	14,600	805,600	349,800	156,400	31,100	105,700	3,300	78,200	81,100	725,400
San Benito	3,300	-	3,300	33,600	16,200	7,200	1,400	1,200	200	3,600	3,800	33,300
San Bernardino	44,400	1,300	43,100	1,329,200	555,200	248,200	49,300	218,400	5,300	124,100	128,700	1,151,900
San Diego	75,300	800	74,500	1,963,700	859,800	384,300	76,400	243,500	8,200	192,200	199,300	1,783,200
San Francisco	22,100	22,100	-	301,800	137,300	61,400	12,200	27,100	1,300	30,700	31,800	285,000
San Joaquin	12,500	-	12,500	483,600	211,000	94,300	18,800	61,600	2,000	47,100	48,800	437,300
San Luis Obispo	5,000	-	5,000	119,200	57,500	25,700	5,100	4,200	500	12,900	13,300	119,700
San Mateo	12,600	10,800	1,800	304,200	141,800	63,300	12,600	20,700	1,300	31,700	32,800	293,800
Santa Barbara	8,000	-	8,000	199,600	90,500	40,400	8,000	18,600	900	20,200	21,000	187,300
Santa Clara	92,400	4,400	88,000	695,000	313,700	140,200	27,900	67,400	3,000	70,100	72,700	650,300
Santa Cruz	5,000	5,000	-	94,700	45,500	20,400	4,000	3,700	400	10,100	10,600	94,700
Shasta	5,000	2,200	2,800	91,000	43,900	19,700	3,900	3,200	400	9,800	10,100	91,500
Sierra	-	-	-	1,600	700	300	100	100	-	200	200	1,000
Siskiyou	200	-	200	16,100	7,700	3,500	700	600	100	1,700	1,800	15,600
Solano	12,300	7,100	5,200	241,100	104,200	46,600	9,300	32,500	1,000	23,300	24,200	216,800
Sonoma	7,800	5,100	2,700	226,300	106,900	47,800	9,500	12,400	1,000	23,900	24,800	222,200
Stanislaus	20,500	-	20,500	316,700	152,700	68,200	13,600	11,200	1,400	34,200	35,400	316,400
Sutter	2,300	-	2,300	41,600	19,800	8,900	1,800	1,800	200	4,400	4,700	40,600
Tehama	900	-	900	27,600	13,300	5,900	1,200	1,000	100	3,000	3,100	27,000
Trinity	-	-	-	4,400	2,100	900	200	200	-	500	500	3,900
Tulare	13,300	-	13,300	242,400	117,000	52,200	10,400	8,500	1,100	26,100	27,100	243,000
Tuolumne	900	-	900	21,600	10,400	4,600	900	800	100	2,400	2,400	21,300
Ventura	25,500	4,600	20,900	491,700	225,700	100,900	20,100	40,200	2,100	50,400	52,300	468,100
Yolo	4,300	400	3,900	109,900	49,800	22,200	4,400	10,400	500	11,100	11,500	103,600
Yuba	1,700	-	1,700	42,600	20,400	9,100	1,800	1,800	200	4,500	4,800	41,700
Other- not located	-	-	-	-	-	-	-	-	-	-	-	-
STATE TOTALS	954,000	136,300	818,000	21,300,000	9,370,500	4,188,300	833,000	2,563,900	88,900	2,094,000	2,171,900	19,400,000

**Table 64: Technical Biosolids and Biomass in MSW (BDT/yr), 2020**

County Name	Biosolids Generation	Biosolids Landfilled	Biosolids Diverted	Total MSW Biomass Landfilled	Landfilled MSW Components						Est. MSW Biomass Diverted
					Paper/ Cardboard	C&D Lumber	Leaves, Grass	Prunings & Trimmings	Branches & Stumps	Other Biomass (+Biosolids)	
Alameda	22,900	-	22,880	360,650	170,800	76,350	15,200	19,000	1,600	38,150	39,550
Alpine	-	-	-	450	250	100	-	-	-	50	50
Amador	-	-	-	11,550	5,550	2,500	500	400	50	1,250	1,300
Butte	-	-	-	53,050	25,500	11,400	2,250	2,000	250	5,700	5,950
Calaveras	-	-	-	13,200	5,750	2,550	500	1,700	50	1,300	1,350
Colusa	-	-	-	6,450	2,850	1,300	250	750	50	600	650
Contra Costa	16,600	-	16,560	285,100	112,200	50,150	9,950	60,700	1,050	25,050	26,000
Del Norte	400	-	400	4,850	2,350	1,050	200	150	-	550	550
El Dorado	2,200	-	2,160	43,750	21,050	9,400	1,900	1,600	200	4,700	4,900
Fresno	18,600	-	18,640	225,450	108,650	48,600	9,650	8,000	1,050	24,300	25,200
Glenn	600	-	560	6,000	2,800	1,250	250	350	50	650	650
Humboldt	1,000	-	1,040	23,050	11,100	4,950	1,000	800	100	2,500	2,600
Imperial	3,400	-	3,360	79,750	36,550	16,350	3,250	6,650	350	8,150	8,450
Inyo	-	-	-	7,850	2,000	900	200	3,850	-	450	450
Kern	17,200	-	17,200	233,650	112,650	50,350	10,000	8,300	1,050	25,200	26,100
Kings	2,400	-	2,400	32,800	15,850	7,050	1,400	1,150	150	3,550	3,650
Lake	500	-	480	13,500	6,500	2,900	600	500	50	1,450	1,500
Lassen	-	-	-	5,800	2,800	1,200	250	200	50	650	650
Los Angeles	185,000	-	185,040	2,737,950	1,231,850	550,600	109,500	273,500	11,750	275,300	285,450
Madera	1,100	-	1,120	49,250	21,750	9,750	1,950	5,750	200	4,850	5,000
Marin	3,200	-	3,200	60,000	23,350	10,400	2,050	13,350	200	5,250	5,400
Mariposa	200	-	160	3,800	1,850	850	150	150	-	400	400
Mendocino	1,200	-	1,200	18,250	8,750	3,900	800	650	100	2,000	2,050
Merced	2,600	-	2,560	79,750	36,950	16,500	3,300	5,800	350	8,250	8,600
Modoc	-	-	-	1,800	900	400	50	50	-	200	200
Mono	-	-	-	10,650	4,900	2,200	450	800	50	1,100	1,150
Monterey	3,800	-	3,760	98,200	47,400	21,200	4,200	3,450	450	10,550	10,950
Napa	2,200	-	2,160	43,550	20,300	9,100	1,800	2,950	200	4,500	4,700
Nevada	1,200	-	1,200	19,350	9,300	4,150	850	700	100	2,050	2,200
Orange	50,000	-	50,000	1,099,350	420,200	187,800	37,350	258,700	4,000	93,900	97,400
Placer	-	-	-	86,650	41,750	18,700	3,700	3,100	400	9,300	9,700
Plumas	200	-	160	5,300	2,550	1,150	250	200	-	550	600
Riverside	57,300	-	57,280	832,100	341,800	152,800	30,400	148,300	3,250	76,350	79,200
Sacramento	11,700	-	11,680	402,800	174,900	78,200	15,550	52,850	1,650	39,100	40,550
San Benito	2,600	-	2,640	16,800	8,100	3,600	700	600	100	1,800	1,900
San Bernardino	34,500	-	34,480	664,600	277,600	124,100	24,650	109,200	2,650	62,050	64,350
San Diego	59,600	-	59,600	981,850	429,900	192,150	38,200	121,750	4,100	96,100	99,650
San Francisco	-	-	-	150,900	68,650	30,700	6,100	13,550	650	15,350	15,900
San Joaquin	10,000	-	10,000	241,800	105,500	47,150	9,400	30,800	1,000	23,550	24,400
San Luis Obispo	4,000	-	4,000	59,600	28,750	12,850	2,550	2,100	250	6,450	6,650
San Mateo	1,400	-	1,440	152,100	70,900	31,650	6,300	10,350	650	15,850	16,400
Santa Barbara	6,400	-	6,400	99,800	45,250	20,200	4,000	9,300	450	10,100	10,500
Santa Clara	70,400	-	70,400	347,500	156,850	70,100	13,950	33,700	1,500	35,050	36,350
Santa Cruz	-	-	-	47,350	22,750	10,200	2,000	1,850	200	5,050	5,300
Shasta	2,200	-	2,240	45,500	21,950	9,850	1,950	1,600	200	4,900	5,050
Sierra	-	-	-	800	350	150	50	50	-	100	100
Siskiyou	200	-	160	8,050	3,850	1,750	350	300	50	850	900
Solano	4,200	-	4,160	120,550	52,100	23,300	4,650	16,250	500	11,650	12,100
Sonoma	2,200	-	2,160	113,150	53,450	23,900	4,750	6,200	500	11,950	12,400
Stanislaus	16,400	-	16,400	158,350	76,350	34,100	6,800	5,600	700	17,100	17,700
Sutter	1,800	-	1,840	20,800	9,900	4,450	900	900	100	2,200	2,350
Tehama	700	-	720	13,800	6,650	2,950	600	500	50	1,500	1,550
Trinity	-	-	-	2,200	1,050	450	100	100	-	250	250
Tulare	10,600	-	10,640	121,200	58,500	26,100	5,200	4,250	550	13,050	13,550
Tuolumne	700	-	720	10,800	5,200	2,300	450	400	50	1,200	1,200
Ventura	16,700	-	16,720	245,850	112,850	50,450	10,050	20,100	1,050	25,200	26,150
Yolo	3,100	-	3,120	54,950	24,900	11,100	2,200	5,200	250	5,550	5,750
Yuba	1,400	-	1,360	21,300	10,200	4,550	900	900	100	2,250	2,400
Other- not located	-	-	-	-	-	-	-	-	-	-	-
STATE TOTALS	654,000	-	654,400	10,655,250	4,685,250	2,094,150	416,500	1,281,950	44,450	1,047,000	1,085,950

## **2.4 Dedicated Biomass Crops**

Dedicated biomass crops are not currently grown to any significant extent in California. There is some potential that they will develop in combination with phytoremediation efforts for contaminated lands such as salt-affected soils in the San Joaquin Valley.<sup>13</sup> Sugar and starch crops may develop to support the production of ethanol and other biofuels and bioproducts. Residues from these crops could be used for power generation or the fuel products used directly. Dedicated crop production could lead to crop shifting on existing agricultural lands but might also be associated with more marginal lands. This analysis includes a dedicated biomass crop category producing 5 million BDT/y by 2017 with an availability of 90%, recognizing that this constitutes a highly uncertain source of supply. The production would likely occur logistically. The analysis here assumes an average yield of 5 BDT/acre. Water may be a key limiting resource in this production. Increasing production of corn for ethanol could occur if state policies lead to increasing blending fraction in gasoline, including the use of E85 (85% ethanol with 15% gasoline) as a motor fuel.

## **2.5 Biomass Resource Summaries**

Gross and technical biomass resource potentials are summarized by year and principal resource categories in Tables 65 – 72. Quantities allocated to thermal and biological conversion for the purposes of estimating power generation potentials are also listed in the tables. Biomass associated with landfill gas to energy (LFGTE) and sewage digester gas from waste water treatment plants (WWTP) is not shown in the table but these categories appear in the power estimates shown later (see section 3.3). Gross resource distribution by county for 2007 is shown in Figure 9.

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<sup>13</sup> Jenkins, B.M., G. Sun, V. Cervinka, J. Faria, P. Thy, D.H. Kim, T.R. Rumsey and M.W. Yore. 2003. Salt separation and purification concepts in integrated farm drainage management systems. Paper No. 032236, ASAE, St. Joseph, Michigan.

**Figure 9: Estimated Total Biomass (gross BDT/y) in California, 2007**



**Table 65: Summary Gross Biomass Resource Potential (BDT/yr), 2007**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversion	Biosolids Landfilled (not in Total)	Biosolids Diverted	Total MSW Biomass Landfilled	Total MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Total Orchard and Vine	Total Field and Seed	Total Vegetable	Total Food Processing	Total Forestry	Total Dedicated Crop
Alameda	1,383,000	1,226,210	156,610	3,600	26,200	662,000	650,000	18,300	18,300	0	3,100	270	0	140	23,000	-
Alpine	117,000	114,600	2,670	0	0	1,000	1,000	2,500	2,500	0	0	0	0	0	0	-
Amador	271,000	244,110	26,860	0	0	19,000	19,000	23,200	23,200	0	5,100	90	0	220	204,700	-
Butte	1,146,000	1,107,000	39,610	2,000	0	82,000	82,000	23,200	22,300	900	67,910	336,960	240	103,230	450,900	-
Calaveras	432,000	400,790	31,760	0	0	21,000	19,000	25,900	25,600	0	1,500	90	0	1,100	363,400	-
Colusa	804,000	756,790	46,940	0	0	10,000	9,000	20,400	19,600	0	32,180	497,710	24,020	117,000	93,900	-
Contra Costa	976,000	774,380	201,590	8,700	17,400	480,000	392,000	19,600	19,600	300	4,430	29,480	17,380	870	14,500	-
Del Norte	561,000	538,800	21,960	0	400	8,000	8,000	20,400	20,400	7,900	0	0	0	0	524,000	-
El Dorado	894,000	869,600	23,910	200	2,200	71,000	71,000	10,100	9,800	0	4,170	0	0	30	735,400	-
Fresno	3,457,000	2,204,420	1,252,750	0	17,800	344,000	344,000	823,800	702,300	239,800	462,570	392,820	325,920	134,550	611,1500	-
Glenn	643,000	550,980	91,980	0	500	9,000	9,000	90,000	89,000	36,400	44,480	307,620	0	72,480	109,700	-
Humboldt	2,981,000	2,892,300	88,410	0	1,200	43,000	43,000	80,000	79,600	31,100	0	900	0	50	2,812,800	-
Imperial	1,358,000	578,170	779,890	0	3,000	115,000	110,000	627,300	611,000	12,000	3,980	190,190	125,580	2,000	180,800	-
Inyo	582,000	551,830	30,460	0	0	14,000	7,000	19,700	19,700	0	30	0	450	2,230	538,800	-
Kern	2,502,000	1,868,780	633,270	0	15,900	345,000	345,000	552,600	537,500	338,400	251,720	412,190	13,540	142,970	423,200	-
Kings	1,186,000	609,010	577,160	0	2,200	48,000	48,000	530,500	500,000	363,500	49,710	412,070	37,270	55,730	2,400	-
Lake	500,000	488,550	11,970	0	500	22,000	22,000	7,600	7,400	0	15,390	1,890	30	1,870	429,000	-
Lassen	910,000	851,810	57,930	300	0	10,000	10,000	54,300	53,800	0	0	2,710	1,700	0	831,100	-
Los Angeles	10,251,000	8,990,290	1,261,160	36,900	213,100	5,045,000	4,707,000	7,100	6,500	6,400	750	1,440	180	520	276,200	-
Madera	1,007,000	700,470	306,800	0	1,000	69,000	63,000	280,800	257,100	148,900	189,870	43,390	8,010	53,710	298,700	-
Marin	321,000	229,720	91,820	0	3,900	118,000	95,000	50,200	48,900	25,200	150	1,470	270	0	52,500	-
Mariposa	282,000	254,000	28,040	0	200	6,000	6,000	26,800	26,800	0	300	600	0	0	241,700	-
Mendocino	2,889,000	2,859,390	30,170	0	1,300	32,000	32,000	23,500	22,200	3,100	24,890	0	380	9,600	2,765,700	-
Merced	1,733,000	674,420	1,058,680	0	2,300	115,000	111,000	938,200	854,100	536,600	112,080	199,740	58,420	192,050	4,300	-
Modoc	616,000	522,700	92,720	0	0	3,000	3,000	84,100	83,300	0	0	21,900	8,110	0	495,600	-
Mono	240,000	229,000	11,320	0	0	16,000	16,000	7,400	7,400	0	0	0	130	0	200,300	-
Monterey	1,089,000	659,150	429,750	1,500	4,200	176,000	176,000	80,500	80,100	3,100	50,970	23,500	315,130	22,280	240,700	-
Napa	435,000	410,780	24,630	0	2,200	71,000	69,000	8,800	8,500	0	55,120	0	0	18,160	210,700	-
Nevada	510,000	496,770	12,980	1,900	1,300	34,000	34,000	6,400	6,100	0	470	0	0	0	434,000	-
Orange	3,561,000	2,858,130	702,910	6,200	55,000	1,935,000	1,534,000	1,200	1,200	0	60	0	2,210	1,570	32,000	-
Placer	741,000	695,550	45,390	3,200	0	131,000	131,000	19,700	18,900	1,500	2,110	30,950	50	7,190	418,700	-
Plumas	1,003,000	985,400	17,700	0	200	10,000	10,000	15,800	15,800	0	0	0	0	0	967,400	-
Riverside	3,085,000	2,381,170	704,110	0	50,100	1,164,000	991,000	296,200	235,600	136,900	34,620	38,050	42,610	3,200	465,600	-
Sacramento	1,600,000	1,304,350	296,300	0	12,700	698,000	629,000	91,600	86,900	34,600	44,460	104,440	12,920	6,150	900	-
San Benito	222,000	141,440	81,020	0	2,300	23,000	23,000	47,700	47,000	1,500	8,370	2,830	28,790	4,140	82,100	-
San Bernardino	3,503,000	2,768,630	734,750	1,000	33,900	1,044,000	905,000	412,500	385,700	225,600	3,700	5,700	4,770	2,080	1,091,400	-
San Diego	3,901,000	3,372,280	529,500	700	65,000	1,713,000	1,556,000	60,200	30,600	9,000	35,380	3,100	9,090	0	459,600	-
San Francisco	562,000	492,700	69,410	21,200	0	289,000	273,000	0	0	0	0	0	0	0	0	-
San Joaquin	1,854,000	1,216,330	637,060	0	8,800	341,000	308,000	418,200	390,800	227,800	203,370	262,460	126,450	181,130	4,400	-
San Luis Obispo	643,000	489,520	152,710	0	4,500	108,000	108,000	97,000	93,700	300	53,910	16,100	34,820	910	219,400	-
San Mateo	693,000	622,660	70,820	10,400	1,700	293,000	283,000	3,600	3,600	0	180	780	2,270	0	108,900	-
Santa Barbara	775,000	606,190	169,230	0	7,400	184,000	173,000	47,600	46,400	3,200	37,720	8,750	76,840	7,320	232,400	-
Santa Clara	1,529,000	1,331,640	197,140	4,000	79,800	631,000	590,000	23,500	23,300	300	3,280	1,160	18,460	4,300	177,700	-
Santa Cruz	426,000	389,640	36,830	4,600	0	87,000	87,000	2,600	2,600	300	4,950	0	17,020	90	227,800	-
Shasta	1,751,000	1,687,430	63,560	1,800	2,300	74,000	74,000	46,600	46,300	0	600	13,800	2,670	530	1,536,900	-
Sierra	310,000	301,800	8,820	0	0	1,000	1,000	8,500	8,500	0	0	0	0	0	299,600	-
Siskiyou	2,437,000	2,359,270	78,260	0	200	14,000	14,000	72,700	72,300	3,100	0	45,570	2,780	0	2,288,000	-
Solano	566,000	423,800	141,720	6,000	4,400	204,000	183,000	69,500	62,200	8,800	15,010	67,250	15,460	2,370	5,000	-
Sonoma	1,306,000	1,131,990	173,740	4,500	2,400	200,000	196,000	130,200	115,500	66,400	76,510	2,770	360	13,550	684,200	-
Stanislaus	1,683,000	845,310	838,130	0	15,300	236,000	236,000	753,700	709,500	398,600	138,920	91,600	37,080	147,510	27,100	-
Sutter	567,000	532,320	33,760	0	1,500	28,000	27,000	15,400	14,000	1,100	45,800	354,170	12,780	81,860	0	-
Tehama	737,000	656,110	81,630	0	700	21,000	21,000	77,400	76,300	10,300	30,940	8,600	60	15,470	562,200	-
Trinity	1,847,000	1,841,350	5,580	0	0	3,000	3,000	4,900	4,900	0	150	0	0	0	1,835,500	-
Tulare	3,121,000	1,415,730	1,704,790	0	9,500	174,000	174,000	1,667,900	1,638,100	1,026,000	253,730	311,960	3,130	38,640	488,000	-
Tuolumne	613,000	573,000	40,330	0	800	19,000	19,000	36,600	36,600	17,200	0	0	0	40	537,700	-
Ventura	1,072,000	913,720	158,660	4,000	18,000	424,000	404,000	9,800	9,800	0	32,340	4,050	49,860	2,830	127,100	-
Yolo	578,000	466,960	110,580	300	3,100	87,000	82,000	27,600	25,400	5,000	31,310	217,040	61,800	30,210	37,500	-
Yuba	431,000	386,100	44,770	0	1,100	28,000	27,000	39,200	39,200	6,600	24,400	109,620	0	35,880	166,100	-
Other- not located	1,538,000	201,890	1,336,600	0	0	0	0	1,183,200	0	0	29,440	172,450	153,400	0	0	0
STATE Total	83,000,000	66,047,000	16,690,000	123,000	698,000	18,300,000	16,600,000	10,150,000	8,380,000	3,920,000	2,492,000	4,750,000	1,652,000	1,518,000	26,800,000	0

**Table 66: Summary Technical Biomass Resource Potential (BDT/yr), 2007**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversion	Biosolids Landfilled (not in Total)	Biosolids Diverted	Total MSW Biomass Landfilled	Total MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Total Orchard and Vine	Total Field and Seed	Total Vegetable	Total Food Processing	Total Forestry	Total Dedicated Crop	
Alameda	367,000	293,600	73,800	-	21,000	330,905	-	4,600	4,600	0	2,200	140	0	110	8,400	-	
Alpine	34,000	33,000	700	-	0	435	-	600	600	0	0	0	0	0	32,600	-	
Amador	162,000	154,400	7,600	-	0	9,330	-	5,800	5,800	0	3,600	50	0	180	143,100	-	
Butte	584,000	570,300	14,200	-	0	41,085	-	6,100	5,900	500	47,700	168,490	10	26,580	294,500	-	
Calaveras	269,000	260,100	9,300	-	0	10,780	-	6,400	6,400	0	1,000	50	0	880	250,300	-	
Colusa	348,000	340,600	7,400	-	0	4,760	-	4,900	4,900	0	22,400	244,000	1,210	12,350	58,300	-	
Contra Costa	290,000	195,400	94,700	-	13,900	240,155	-	5,100	5,100	200	3,100	14,750	7,330	690	5,100	-	
Del Norte	169,000	160,900	7,900	-	300	3,980	-	7,100	7,100	4,000	0	0	0	0	157,400	-	
El Dorado	588,000	578,300	9,400	-	1,800	35,305	-	2,500	2,500	0	2,800	0	0	20	545,300	-	
Fresno	1,318,000	934,900	382,900	-	14,200	172,105	-	294,300	235,500	119,900	323,700	184,000	26,320	44,120	259,100	-	
Glenn	287,000	254,800	32,500	-	400	4,590	-	31,500	31,400	18,200	31,000	151,440	0	7,930	60,400	-	
Humboldt	1,364,000	1,331,700	31,900	-	1,000	21,380	-	27,700	27,700	15,600	0	0	0	0	1,313,500	-	
Imperial	444,000	254,600	189,700	-	2,400	57,605	-	156,600	155,800	6,000	2,800	62,900	19,560	0	142,400	-	
Inyo	147,000	136,500	10,700	-	0	7,040	-	4,900	4,900	0	20	0	20	0	135,300	-	
Kern	1,060,000	805,800	254,200	-	12,700	172,465	-	219,900	219,000	169,200	176,190	150,260	690	95,760	232,000	-	
Kings	495,000	257,600	237,900	-	1,800	24,145	-	231,300	216,000	181,800	34,810	177,870	1,870	22,630	1,000	-	
Lake	292,000	287,700	4,200	-	400	11,120	-	2,000	1,900	0	10,770	950	0	1,500	265,100	-	
Lassen	706,000	691,600	14,600	-	0	4,965	-	13,500	13,500	0	0	1,240	90	0	686,400	-	
Los Angeles	2,823,000	2,192,400	630,500	-	170,500	2,522,580	-	3,400	3,200	3,200	530	720	10	0	125,200	-	
Madera	527,000	405,100	122,200	-	800	34,395	-	112,800	101,600	74,500	132,900	12,680	400	39,790	193,500	-	
Marin	107,000	67,500	39,300	-	3,100	59,025	-	18,600	18,500	12,600	110	0	10	0	25,900	-	
Mariposa	172,000	164,800	7,300	-	200	3,220	-	6,700	6,700	0	210	300	0	0	161,500	-	
Mendocino	1,291,000	1,281,300	9,800	-	1,000	16,095	-	6,600	6,400	1,600	17,430	0	20	7,680	1,242,200	-	
Merced	708,000	274,500	434,000	-	1,800	57,505	-	389,200	347,700	268,300	78,460	62,420	2,920	113,660	2,500	-	
Modoc	457,000	435,200	21,600	-	0	1,355	-	20,900	20,900	0	0	8,410	400	0	425,700	-	
Mono	112,000	108,400	3,800	-	0	8,245	-	1,900	1,900	0	0	0	10	0	102,000	-	
Monterey	288,000	234,200	53,900	-	3,400	87,810	-	21,100	20,900	1,600	35,680	10,990	15,780	17,820	95,600	-	
Napa	224,000	214,000	10,100	-	1,800	35,715	-	2,200	2,200	0	38,590	0	0	14,520	131,300	-	
Nevada	329,000	323,800	4,800	-	1,000	16,790	-	1,500	1,500	0	330	0	0	0	309,000	-	
Orange	1,023,000	673,200	350,200	-	44,000	967,500	-	300	300	0	40	0	140	1,260	10,100	-	
Placer	341,000	322,900	18,100	-	0	65,620	-	5,300	5,200	800	1,490	15,480	0	780	252,300	-	
Plumas	676,000	670,900	5,000	-	200	4,850	-	4,000	4,000	0	0	0	0	0	666,800	-	
Riverside	1,020,000	709,500	310,200	-	40,100	581,950	-	121,200	93,300	68,500	24,230	17,160	6,370	30	228,700	-	
Sacramento	475,000	345,900	129,000	-	10,200	349,240	-	32,500	30,400	17,300	31,120	50,460	640	60	700	-	
San Benito	80,000	64,100	16,000	-	1,800	11,615	-	12,300	12,200	800	5,860	1,310	1,450	3,320	42,500	-	
San Bernardino	1,360,000	1,034,100	325,500	-	27,100	522,165	-	165,800	152,800	112,800	2,590	2,080	400	0	639,500	-	
San Diego	1,211,000	955,100	255,800	-	52,000	856,705	-	24,800	10,000	4,500	24,760	1,250	920	0	250,500	-	
San Francisco	145,000	109,900	34,700	-	0	144,555	-	0	0	0	0	0	0	0	0	-	
San Joaquin	759,000	535,200	223,900	-	7,000	170,290	-	167,400	154,700	113,900	142,360	117,110	10,330	142,260	2,400	-	
San Luis Obispo	252,000	215,900	36,600	-	3,600	53,795	-	24,400	23,600	200	37,740	8,050	1,750	730	122,400	-	
San Mateo	187,000	153,300	33,500	-	1,400	146,525	-	900	900	0	120	400	120	0	37,300	-	
Santa Barbara	233,000	193,900	38,900	-	5,900	92,195	-	12,600	12,400	1,600	26,410	3,020	3,860	5,850	82,900	-	
Santa Clara	467,000	380,000	87,000	-	63,800	315,290	-	6,000	6,000	200	2,300	450	3,380	3,430	72,300	-	
Santa Cruz	148,000	137,300	10,300	-	0	43,505	-	800	800	200	3,470	0	860	70	98,900	-	
Shasta	956,000	937,000	18,900	-	1,800	36,795	-	11,600	11,600	0	420	6,900	130	420	897,800	-	
Sierra	196,000	193,800	2,300	-	0	760	-	2,100	2,100	0	0	0	0	0	193,200	-	
Siskiyou	1,137,000	1,116,600	20,500	-	200	7,140	-	19,000	19,000	1,600	0	19,690	140	0	1,091,000	-	
Solano	169,000	121,400	47,600	-	3,500	101,765	-	18,400	17,800	4,400	10,510	29,240	770	1,710	3,100	-	
Sonoma	556,000	482,200	73,400	-	1,900	99,870	-	51,500	45,500	33,200	53,560	340	20	10,000	338,400	-	
Stanislaus	673,000	347,700	325,000	-	12,200	118,115	-	299,000	277,100	199,300	97,250	16,540	1,860	115,730	12,000	-	
Sutter	235,000	228,000	7,400	-	1,200	13,785	-	4,000	3,900	600	32,060	174,200	640	9,560	0	-	
Tehama	406,000	382,200	24,000	-	600	10,685	-	21,900	21,800	5,200	21,650	3,910	0	11,960	335,500	-	
Trinity	742,000	740,800	1,500	-	0	1,690	-	1,200	1,200	0	110	0	0	0	739,300	-	
Tulare	1,290,000	595,400	695,100	-	7,600	86,830	-	677,600	666,100	513,000	177,610	119,080	610	21,160	200,000	-	
Tuolumne	387,000	371,500	15,900	-	600	9,595	-	14,000	4,300	0	0	0	0	0	363,200	-	
Ventura	294,000	238,300	55,400	-	14,400	212,200	-	2,500	2,500	0	22,650	2,030	3,350	2,270	34,200	-	
Yolo	199,000	177,900	21,500	-	2,500	43,490	-	7,800	7,600	2,500	21,910	89,960	3,100	8,120	22,500	-	
Yuba	228,000	213,400	14,300	-	900	13,785	-	11,500	11,500	3,300	17,090	54,810	0	5,990	123,600	-	
Other- not located	247,000	89,400	157,200	-	0	0	-	146,500	0	0	20,610	68,760	10,680	0	0	-	
STATE Total	32,600,000	25,980,000	6,076,000	-	558,400	9,077,190	-	3,475,000	3,077,500	1,960,000	1,744,000	2,054,000	128,000	1,214,000	14,300,000	0	-

**Table 67: Summary Gross Biomass Resource Potential (BDT/yr), 2010**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversion	Biosolids Landfilled (not in Total)	Biosolids Diverted	Total MSW Biomass Landfilled	Total MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Total Orchard and Vine	Total Field and Seed	Total Vegetable	Total Food Processing	Total Forestry	Dedicated Crop
Alameda	1,404,000	1,245,210	159,050	3,660	26,610	672,200	660,200	18,600	18,600	-	3,300	300	-	100	23,000	-
Alpine	118,000	114,710	2,900	-	-	900	1,100	2,700	2,700	-	-	-	-	-	112,900	-
Amador	275,000	246,730	28,500	-	-	19,900	20,300	24,600	24,600	-	5,400	100	-	200	204,700	-
Butte	1,188,000	1,145,610	42,400	2,140	-	87,800	87,700	24,900	23,900	1,000	70,700	356,600	200	109,200	450,900	-
Calaveras	437,000	402,920	33,600	-	-	22,800	20,100	27,400	27,100	-	1,600	100	-	1,100	363,400	-
Colusa	844,000	793,620	50,200	-	-	10,900	10,200	23,200	22,300	-	34,100	523,900	24,200	123,500	93,900	-
Contra Costa	1,027,000	814,220	212,700	9,190	18,370	507,000	413,900	20,700	20,700	300	4,600	28,700	18,200	900	14,500	-
Del Norte	563,000	539,690	23,300	-	430	8,500	8,500	21,600	21,600	8,400	-	-	-	-	524,000	-
El Dorado	908,000	881,490	26,100	220	2,400	77,000	77,500	11,000	10,700	-	4,200	-	-	-	735,400	-
Fresno	3,615,000	2,259,680	1,355,300	-	19,810	383,000	382,900	916,900	781,700	266,900	491,000	351,200	327,800	130,800	611,500	-
Glenn	673,000	572,340	100,500	-	550	10,100	9,800	98,300	97,200	39,800	46,700	321,000	-	76,700	109,700	-
Humboldt	2,984,000	2,893,980	90,200	-	1,230	43,600	43,900	81,600	81,200	31,800	-	900	-	100	2,812,800	-
Imperial	1,498,000	600,370	897,300	-	3,520	135,200	129,100	736,200	717,100	14,100	4,000	177,700	129,400	1,700	180,800	-
Inyo	584,000	552,200	31,400	-	-	14,500	7,200	20,400	20,400	-	-	500	2,200	538,800	-	
Kern	2,690,000	1,964,480	726,000	-	18,290	396,800	396,800	635,600	618,200	389,200	269,000	392,300	13,200	145,300	423,200	-
Kings	1,241,000	591,190	649,600	-	2,490	54,700	54,400	601,500	566,900	412,200	52,400	382,700	37,500	52,700	2,400	-
Lake	504,000	491,370	12,600	-	530	23,500	23,300	8,000	7,800	-	15,800	1,900	-	1,900	429,000	-
Lassen	915,000	853,080	61,900	320	-	10,700	10,700	58,100	57,600	-	-	2,700	1,700	-	831,100	-
Los Angeles	10,593,000	9,288,760	1,304,300	38,160	220,400	5,218,100	4,868,200	7,300	6,700	6,600	800	1,400	200	500	276,200	-
Madera	1,083,000	730,480	352,300	-	1,150	79,300	72,600	323,400	296,100	171,500	202,800	41,500	8,100	55,200	298,700	-
Marin	324,000	231,110	92,600	-	3,930	119,000	95,700	50,600	49,300	25,400	200	1,500	300	-	52,500	-
Mariposa	284,000	254,650	29,600	-	210	6,800	6,300	28,300	28,300	-	300	600	-	-	241,700	-
Mendocino	2,894,000	2,862,350	31,300	-	1,340	33,200	33,000	24,400	23,000	3,200	26,000	-	400	9,600	2,765,700	-
Merced	1,888,000	700,160	1,188,300	-	2,610	130,500	125,900	1,064,400	969,000	608,800	119,500	188,400	58,300	194,500	4,300	-
Modoc	625,000	523,330	101,100	-	-	3,000	3,300	92,500	91,600	-	-	22,000	8,100	-	495,600	-
Mono	244,000	231,660	12,400	-	-	18,000	17,500	8,100	8,100	-	-	-	100	-	200,300	-
Monterey	1,106,000	667,520	438,400	1,530	4,290	179,600	180,000	82,500	82,100	3,200	54,400	21,100	321,000	22,300	240,700	-
Napa	451,000	423,900	26,600	-	2,360	76,700	74,100	9,600	9,300	-	58,900	-	-	18,200	210,700	-
Nevada	512,000	498,750	13,400	1,960	1,340	34,600	35,100	6,600	6,300	-	500	-	-	-	434,000	-
Orange	3,770,000	3,025,770	744,500	6,570	58,260	2,049,800	1,625,000	1,300	1,300	-	100	-	2,200	1,600	32,000	-
Placer	779,000	727,690	51,200	3,610	-	147,900	147,600	22,200	21,300	1,700	2,100	32,700	100	7,600	418,700	-
Plumas	1,004,000	985,720	18,000	-	200	9,800	10,200	16,100	16,100	-	-	-	-	-	967,400	-
Riverside	3,548,000	2,720,850	827,500	-	59,410	1,380,100	1,175,100	351,300	279,400	162,300	35,100	35,900	43,000	2,800	465,600	-
Sacramento	1,689,000	1,375,500	314,000	-	13,490	741,800	668,100	97,300	92,300	36,700	45,900	102,500	13,000	6,500	900	-
San Benito	236,000	146,980	89,300	-	2,580	26,000	25,800	53,400	52,600	1,700	8,700	2,700	30,800	4,200	82,100	-
San Bernardino	3,782,000	2,962,320	819,500	1,120	37,840	1,165,800	1,010,200	460,500	430,600	251,800	3,800	5,400	4,800	2,100	1,091,400	-
San Diego	4,079,000	3,521,980	557,000	740	68,430	1,803,900	1,638,100	63,400	32,200	9,500	33,800	2,700	9,100	-	459,600	-
San Francisco	580,000	508,430	71,700	21,870	-	298,400	281,700	-	-	-	-	-	-	-	-	-
San Joaquin	2,006,000	1,300,590	705,300	-	9,960	385,300	348,500	473,200	442,200	257,700	216,100	257,000	127,600	183,900	4,400	-
San Luis Obispo	654,000	496,620	157,100	-	4,650	111,100	111,500	100,100	96,700	300	56,800	13,900	35,400	900	219,400	-
San Mateo	707,000	634,660	72,400	10,650	1,740	299,900	289,700	3,700	3,700	-	200	700	2,300	-	108,900	-
Santa Barbara	794,000	619,930	174,200	-	7,690	191,700	179,800	49,500	48,200	3,300	39,100	8,500	78,100	7,300	232,400	-
Santa Clara	1,594,000	1,387,230	206,700	4,190	83,660	661,100	618,500	24,800	24,600	300	3,500	1,100	19,200	4,400	177,700	-
Santa Cruz	432,000	394,070	37,400	4,740	-	89,600	89,600	2,500	2,500	300	4,700	-	17,200	100	227,800	-
Shasta	1,765,000	1,697,380	67,600	1,920	2,450	78,500	79,000	49,700	49,400	-	600	14,600	2,700	500	1,536,900	-
Sierra	311,000	301,810	9,000	-	-	1,500	1,000	8,700	8,700	-	-	-	-	-	299,600	-
Siskiyou	2,439,000	2,358,440	80,100	-	200	14,700	14,300	74,500	74,100	3,200	-	44,100	2,800	-	2,288,000	-
Solano	589,000	440,760	148,000	6,300	4,620	213,500	192,000	72,900	65,200	9,200	15,600	67,100	15,500	2,500	5,000	-
Sonoma	1,330,000	1,149,930	180,200	4,670	2,490	207,200	203,300	135,100	119,900	68,900	81,200	2,700	400	13,600	684,200	-
Stanislaus	1,831,000	905,570	925,300	-	16,950	261,700	261,400	834,800	785,800	441,500	147,300	91,200	38,200	152,200	27,100	-
Sutter	599,000	562,440	36,800	-	1,720	31,700	31,000	17,700	16,100	1,300	46,200	372,000	12,700	86,300	-	-
Tehama	749,000	660,540	88,200	-	760	23,100	22,700	83,600	82,400	11,100	31,700	8,500	100	16,100	562,200	-
Trinity	1,848,000	1,841,940	6,000	-	-	3,600	3,300	5,300	5,300	-	200	-	-	-	1,835,500	-
Tulare	3,393,000	1,459,880	1,932,900	-	10,770	196,900	197,300	1,891,400	1,857,600	1,163,500	264,300	303,000	3,200	37,900	488,000	-
Tuolumne	615,000	573,720	41,100	-	820	19,600	19,400	37,300	17,500	-	-	-	-	-	537,700	-
Ventura	1,120,000	954,320	165,500	4,220	19,000	447,900	426,500	10,300	10,300	-	31,500	3,900	50,700	2,900	127,100	-
Yolo	607,000	490,880	115,600	330	3,410	95,600	90,100	30,200	27,800	5,500	32,900	223,100	62,100	31,600	37,500	-
Yuba	457,000	403,970	53,500	-	1,310	32,800	32,200	46,800	46,800	7,900	24,500	115,900	-	37,800	166,100	-
Other- not located	3,888,000	2,467,410	1,420,300	-	-	-	-	1,261,000	-	-	29,400	172,700	159,300	-	-	2,265,305
STATE Total	88,700,000	70,453,000	18,210,000	128,110	744,270	19,368,400	17,662,200	11,307,600	9,400,000	4,420,100	2,621,500	4,698,500	1,679,700	1,549,500	26,765,600	2,265,305

**Table 68: Summary Technical Biomass Resource Potential (BDT/yr), 2010**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversion	Biosolids Landfilled (not in Total)	Biosolids Diverted	Total MSW Biomass Landfilled	Total MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Total Orchard and Vine	Total Field and Seed	Total Vegetable	Total Food Processing	Total Forestry	Dedicated Crop	
Alameda	373,000	298,100	75,200	-	21,300	336,075	-	5,000	4,600	-	2,300	100	-	100	8,400	-	
Alpine	34,000	33,000	1,100	-	-	440	-	1,000	700	-	-	-	-	-	32,600	-	
Amador	163,000	155,200	7,900	-	-	9,945	-	6,000	6,200	-	3,800	100	-	200	143,100	-	
Butte	660,000	644,900	15,600	-	-	43,880	-	7,000	6,300	500	49,500	178,300	-	87,300	294,500	-	
Calaveras	271,000	260,700	10,100	-	-	11,400	-	7,000	6,800	-	1,100	100	-	900	250,300	-	
Colusa	451,000	441,900	8,600	-	-	5,425	-	6,000	5,600	-	23,800	257,000	1,200	98,800	58,300	-	
Contra Costa	304,000	204,700	99,600	-	14,700	253,500	-	5,000	5,300	200	3,200	14,400	7,700	700	5,100	-	
Del Norte	170,000	161,100	8,900	-	300	4,230	-	8,000	7,500	4,200	-	-	-	-	157,400	-	
El Dorado	592,000	581,200	10,500	-	1,900	38,520	-	3,000	2,700	-	3,000	-	-	-	545,300	-	
Fresno	1,436,000	1,014,400	421,100	-	15,800	191,515	-	328,000	262,200	133,500	343,700	165,800	27,000	104,600	259,100	-	
Glenn	352,000	317,000	35,100	-	400	5,030	-	34,000	34,300	19,900	32,700	158,200	-	61,400	60,400	-	
Humboldt	1,364,000	1,332,000	32,300	-	1,000	21,815	-	28,000	28,200	15,900	-	-	-	-	1,313,500	-	
Imperial	484,000	263,500	220,300	-	2,800	67,615	-	184,000	182,900	7,100	2,800	62,300	20,500	1,400	142,400	-	
Inyo	149,000	138,400	10,900	-	-	7,270	-	5,000	5,200	-	-	-	-	1,800	135,300	-	
Kern	1,144,000	852,000	292,300	-	14,600	198,410	-	253,000	251,900	194,600	188,300	141,100	700	116,200	232,000	-	
Kings	537,000	267,700	269,200	-	2,000	27,365	-	262,000	244,800	206,100	36,700	163,600	1,900	42,300	1,000	-	
Lake	293,000	288,500	4,300	-	400	11,750	-	2,000	1,900	-	11,000	1,000	-	1,500	265,100	-	
Lassen	708,000	691,900	16,100	-	-	5,335	-	15,000	14,500	-	-	1,200	100	-	686,400	-	
Los Angeles	2,915,000	2,263,600	651,600	-	176,300	2,609,025	-	3,000	3,300	3,300	500	700	-	400	125,200	-	
Madera	562,000	421,700	140,800	-	900	39,640	-	130,000	117,000	85,800	142,000	11,800	400	44,200	193,500	-	
Marin	108,000	67,700	39,800	-	3,100	59,475	-	19,000	18,700	12,700	100	-	-	-	25,900	-	
Mariposa	173,000	165,000	7,600	-	200	3,405	-	7,000	7,100	-	200	300	-	-	161,500	-	
Mendocino	1,293,000	1,282,600	10,200	-	1,100	16,590	-	7,000	6,500	1,600	18,200	-	-	7,700	1,242,200	-	
Merced	810,000	322,500	487,500	-	2,100	65,270	-	441,000	394,500	304,400	83,600	57,000	2,900	155,600	2,500	-	
Modoc	459,000	435,400	23,700	-	-	1,480	-	23,000	23,000	-	-	8,500	400	-	425,700	-	
Mono	113,000	108,900	4,100	-	-	9,020	-	2,000	2,100	-	-	-	-	-	102,000	-	
Monterey	292,000	237,200	54,500	-	3,400	89,790	-	21,000	21,300	1,600	38,100	9,800	16,100	17,900	95,600	-	
Napa	229,000	218,800	10,500	-	1,900	38,335	-	2,000	2,400	-	41,200	-	-	-	14,600	131,300	-
Nevada	330,000	324,400	5,400	-	1,100	17,290	-	2,000	1,600	-	400	-	-	-	309,000	-	
Orange	1,083,000	712,400	370,600	-	46,600	1,024,920	-	-	300	-	-	-	-	100	1,300	10,100	-
Placer	356,000	335,700	20,500	-	-	73,960	-	6,000	5,900	900	1,500	16,300	-	6,100	252,300	-	
Plumas	676,000	671,000	5,000	-	200	4,920	-	4,000	4,100	-	-	-	-	-	666,800	-	
Riverside	1,160,000	792,700	367,200	-	47,500	690,055	-	144,000	110,500	81,200	24,600	16,200	6,600	2,200	228,700	-	
Sacramento	505,000	367,500	137,500	-	10,800	370,920	-	35,000	32,400	18,400	32,100	49,600	600	5,200	700	-	
San Benito	84,000	65,900	18,000	-	2,100	12,980	-	14,000	13,600	900	6,100	1,300	1,500	3,400	42,500	-	
San Bernardino	1,444,000	1,081,100	363,100	-	30,300	582,900	-	185,000	170,600	125,900	2,600	1,900	400	1,600	639,500	-	
San Diego	1,259,000	989,700	269,300	-	54,700	901,940	-	26,000	10,500	4,800	23,700	1,100	1,000	-	250,500	-	
San Francisco	149,000	113,400	35,800	-	-	149,190	-	-	-	-	-	-	-	-	-	-	
San Joaquin	815,000	563,500	251,900	-	8,000	192,635	-	189,000	175,000	128,900	151,200	114,300	10,600	147,200	2,400	-	
San Luis Obispo	256,000	218,400	37,600	-	3,700	55,525	-	25,000	24,300	200	39,800	7,000	1,800	800	122,400	-	
San Mateo	190,000	155,900	34,300	-	1,400	149,930	-	1,000	900	-	100	400	100	-	37,300	-	
Santa Barbara	238,000	197,800	40,200	-	6,200	95,865	-	13,000	13,000	1,700	27,400	2,900	3,900	5,800	82,900	-	
Santa Clara	486,000	394,700	90,900	-	66,900	330,530	-	6,000	6,300	200	2,400	400	3,600	3,500	72,300	-	
Santa Cruz	149,000	138,200	10,800	-	-	44,800	-	1,000	800	200	3,300	-	900	100	98,900	-	
Shasta	959,000	939,600	19,700	-	2,000	39,260	-	12,000	12,400	-	400	7,300	100	400	897,800	-	
Sierra	196,000	193,800	2,200	-	-	765	-	2,000	2,200	-	-	-	-	-	193,200	-	
Siskiyou	1,137,000	1,116,000	20,500	-	200	7,325	-	19,000	19,300	1,600	-	18,900	100	-	1,091,000	-	
Solano	175,000	125,800	49,600	-	3,700	106,745	-	19,000	18,700	4,600	10,900	29,200	800	2,000	3,100	-	
Sonoma	565,000	489,200	75,700	-	2,000	103,585	-	53,000	47,300	34,500	56,800	300	-	10,800	338,400	-	
Stanislaus	731,000	371,100	359,500	-	13,600	130,835	-	331,000	306,900	220,800	103,100	16,400	1,900	121,700	12,000	-	
Sutter	306,000	298,600	7,800	-	1,400	15,830	-	4,000	4,400	700	32,400	183,100	600	69,100	-	-	
Tehama	411,000	384,400	26,300	-	600	11,545	-	24,000	23,500	5,600	22,300	3,800	-	12,900	335,500	-	
Trinity	742,000	740,900	1,400	-	-	1,820	-	1,000	1,300	-	100	-	-	-	739,300	-	
Tulare	1,406,000	617,900	787,700	-	8,600	98,450	-	768,000	755,300	581,800	185,000	114,600	600	30,400	200,000	-	
Tuolumne	388,000	371,800	15,900	-	700	9,780	-	14,000	4,400	-	-	-	-	-	363,200	-	
Ventura	306,000	247,400	58,600	-	15,200	223,955	-	3,000	2,600	-	22,000	2,000	3,400	2,300	34,200	-	
Yolo	226,000	202,700	23,700	-	2,700	47,775	-	9,000	8,400	2,800	23,100	93,000	3,100	25,300	22,500	-	
Yuba	260,000	243,100	17,300	-	1,000	16,410	-	14,000	13,800	4,000	17,200	58,000	-	30,200	123,600	-	
Other - not located	2,295,000	2,128,400	167,100	-	-	-	-	156,000	-	-	20,600	69,000	11,100	-	-	2,038,775	
STATE Total	35,700,000	29,063,000	6,661,000	-	595,400	9,683,990	-	3,890,000	3,457,800	2,211,100	1,835,000	2,038,000	132,000	1,240,000	14,270,000	2,038,775	

**Table 69: Summary Gross Biomass Resource Potential (BDT/yr), 2017**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversion	Biosolids Landfilled (not in Total)	Biosolids Diverted	Total MSW Biomass Landfilled	Total MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Total Orchard and Vine	Total Field and Seed	Total Vegetable	Total Food Processing	Total Forestry	Dedicated Crop
Alameda	1,477,000	1,309,720	167,500	3,800	28,000	707,000	695,000	19,600	19,600	-	3,850	270	-	200	23,000	-
Alpine	118,000	114,600	2,900	-	-	1,000	1,000	2,800	2,800	-	-	-	-	-	112,900	-
Amador	283,000	251,010	31,500	-	-	22,000	22,000	27,200	27,300	-	6,320	90	-	200	204,700	-
Butte	1,289,000	1,241,170	48,140	2,400	-	100,000	100,000	28,200	27,100	1,100	78,200	407,170	240	124,600	450,900	-
Calaveras	444,000	406,840	37,200	-	-	25,000	22,000	30,300	29,900	-	1,750	90	-	1,200	363,400	-
Colusa	938,000	884,400	53,660	-	-	12,000	11,000	25,700	24,700	-	39,110	591,490	24,660	140,100	93,900	-
Contra Costa	1,105,000	874,640	230,500	9,900	19,900	548,000	447,000	22,300	22,400	300	5,070	26,970	20,300	900	14,500	-
Del Norte	566,000	541,100	25,600	-	500	9,000	9,000	23,800	23,900	9,300	-	-	-	-	524,000	-
El Dorado	921,000	893,470	28,200	200	2,600	83,000	84,000	11,900	11,500	-	4,470	-	-	-	735,400	-
Fresno	3,798,000	2,332,690	1,465,320	-	21,900	424,000	423,000	1,013,900	864,300	295,100	566,320	279,070	332,920	125,700	611,500	-
Glenn	740,000	626,660	113,300	-	600	11,000	11,000	110,900	109,700	44,900	52,560	356,400	-	87,600	109,700	-
Humboldt	2,991,000	2,897,400	93,500	-	1,300	45,000	46,000	84,600	84,300	32,900	-	900	-	100	2,812,800	-
Imperial	1,590,000	606,240	984,020	-	3,900	148,000	141,000	805,800	785,000	15,400	4,120	161,920	143,520	1,200	180,800	-
Inyo	586,000	553,330	32,750	-	-	15,000	8,000	21,400	21,400	-	30	-	450	2,200	538,800	-
Kern	2,854,000	2,058,310	795,370	-	20,100	436,000	436,000	698,000	678,900	427,400	315,260	358,650	12,570	154,100	423,200	-
Kings	1,274,000	553,230	721,410	-	2,800	61,000	61,000	671,600	633,000	460,200	59,680	330,450	37,910	47,600	2,400	-
Lake	511,000	497,420	13,830	-	600	26,000	26,000	8,800	8,600	-	17,130	1,890	30	2,000	429,000	-
Lassen	919,000	853,860	65,000	300	-	11,000	11,000	61,100	60,500	-	-	2,760	1,700	-	831,100	-
Los Angeles	10,900,000	9,556,990	1,343,080	39,300	227,000	5,373,000	5,013,000	7,500	6,900	6,800	850	1,440	180	500	276,200	-
Madera	1,187,000	784,790	401,810	-	1,300	91,000	83,000	369,900	338,800	196,200	237,270	38,020	8,210	59,500	298,700	-
Marin	325,000	231,860	92,870	-	4,000	120,000	96,000	50,800	49,500	25,500	190	1,470	270	-	52,500	-
Mariposa	287,000	255,730	32,000	-	200	7,000	7,000	30,600	30,700	-	330	600	-	-	241,700	-
Mendocino	2,902,000	2,869,240	33,180	-	1,400	35,000	35,000	25,800	24,400	3,400	29,140	-	380	9,600	2,765,700	-
Merced	2,073,000	739,330	1,333,770	-	3,000	148,000	143,000	1,206,200	1,098,100	689,900	139,080	169,450	58,070	202,200	4,300	-
Modoc	639,000	524,770	114,650	-	-	3,000	4,000	106,000	105,000	-	-	22,370	8,050	-	495,600	-
Mono	248,000	234,800	13,740	-	-	20,000	19,000	9,000	9,000	-	-	-	140	-	200,300	-
Monterey	1,156,000	694,110	460,910	1,600	4,600	192,000	192,000	87,900	87,300	3,400	63,390	16,820	335,810	22,300	240,700	-
Napa	474,000	445,200	28,700	-	2,600	83,000	80,000	10,300	9,900	-	68,900	-	-	18,200	210,700	-
Nevada	518,000	503,990	14,400	2,100	1,400	37,000	38,000	7,100	6,800	-	590	-	-	-	434,000	-
Orange	3,925,000	3,149,560	775,220	6,800	60,700	2,135,000	1,692,000	1,300	1,300	-	60	-	2,220	1,700	32,000	-
Placer	816,000	759,440	56,150	4,000	-	163,000	162,000	24,400	23,400	1,900	2,200	37,140	50	8,500	418,700	-
Plumas	1,005,000	986,900	18,800	-	200	10,000	11,000	16,800	16,800	-	-	-	-	-	967,400	-
Riverside	3,874,000	2,958,790	915,860	-	66,000	1,532,000	1,305,000	390,100	310,200	180,200	36,760	32,030	44,860	1,900	465,600	-
Sacramento	1,768,000	1,438,810	329,430	-	14,200	779,000	702,000	102,300	97,000	38,600	50,110	98,700	13,230	7,500	900	-
San Benito	267,000	157,720	109,400	-	3,100	31,000	31,000	63,500	62,500	2,000	9,610	2,610	39,900	4,400	82,100	-
San Bernardino	3,992,000	3,108,510	883,460	1,200	40,800	1,257,000	1,090,000	496,700	464,400	271,600	3,990	4,820	4,860	2,000	1,091,400	-
San Diego	4,271,000	3,684,070	587,120	800	72,200	1,903,000	1,728,000	66,800	34,000	10,000	30,460	2,110	9,220	-	459,600	-
San Francisco	581,000	509,100	71,700	21,900	-	299,000	282,000	-	-	-	-	-	-	-	-	-
San Joaquin	2,231,000	1,431,390	799,230	-	11,500	446,000	403,000	547,700	511,800	298,300	250,760	245,430	130,530	191,200	4,400	-
San Luis Obispo	676,000	510,960	164,770	-	4,900	117,000	117,000	105,000	101,400	300	64,620	10,140	37,170	1,000	219,400	-
San Mateo	710,000	637,290	72,770	10,700	1,700	302,000	291,000	3,700	3,700	-	210	680	2,270	-	108,900	-
Santa Barbara	812,000	630,900	180,640	-	7,900	196,000	184,000	50,600	49,300	3,400	42,830	7,970	82,440	7,400	232,400	-
Santa Clara	1,637,000	1,421,580	214,450	4,300	86,000	680,000	636,000	25,400	25,100	300	4,120	1,060	21,850	4,400	177,700	-
Santa Cruz	438,000	399,580	38,630	4,900	-	93,000	93,000	2,700	2,800	300	4,180	-	17,530	100	227,800	-
Shasta	1,789,000	1,714,370	74,470	2,100	2,700	87,000	87,000	54,900	54,500	-	650	16,720	2,670	600	1,536,900	-
Sierra	311,000	301,800	8,900	-	-	2,000	1,000	8,500	8,500	-	-	-	-	-	299,600	-
Siskiyou	2,443,000	2,357,610	84,810	-	200	16,000	15,000	79,100	78,700	3,400	-	41,910	2,710	-	2,288,000	-
Solano	632,000	471,970	159,390	6,800	5,000	232,000	208,000	79,100	70,900	10,000	17,210	66,960	15,690	2,600	5,000	-
Sonoma	1,376,000	1,185,070	191,160	5,000	2,600	220,000	216,000	143,400	127,200	73,100	93,490	2,680	360	13,500	684,200	-
Stanislaus	2,050,000	1,003,790	1,046,760	-	19,200	296,000	296,000	944,300	889,000	499,400	169,550	90,640	43,460	164,200	27,100	-
Sutter	674,000	632,750	41,130	-	2,100	38,000	37,000	21,000	19,200	1,500	47,400	418,150	12,530	97,900	-	-
Tehama	768,000	668,670	98,960	-	800	26,000	25,000	93,900	92,600	12,500	33,900	8,170	60	17,700	562,200	-
Trinity	1,850,000	1,842,890	6,800	-	-	4,000	4,000	6,000	5,900	-	190	-	-	-	1,835,500	-
Tulare	3,726,000	1,522,690	2,203,240	-	12,300	225,000	225,000	2,156,400	2,118,000	1,326,500	292,350	286,740	3,240	37,400	488,000	-
Tuolumne	621,000	576,600	43,900	-	900	21,000	21,000	39,900	18,800	-	-	-	-	-	537,700	-
Ventura	1,176,000	1,000,000	175,940	4,500	20,200	475,000	452,000	10,900	11,000	-	29,710	3,690	54,140	3,000	127,100	-
Yolo	650,000	529,210	120,950	400	3,700	104,000	98,000	32,800	30,400	6,000	37,160	238,550	62,750	35,500	37,500	-
Yuba	498,000	435,980	62,400	-	1,500	38,000	38,000	54,700	54,700	9,200	24,850	132,130	-	42,700	166,100	-
Other- not located	6,729,000	5,203,980	1,525,190	-	-	-	-	1,336,800	-	-	29,530	174,450	188,390	-	-	5,000,000
STATE Total	95,400,000	75,568,900	19,840,400	133,000	788,100	20,520,000	18,714,000	12,537,700	10,483,700	4,960,300	2,969,510	4,691,770	1,777,540	1,645,200	26,765,600	5,000,000

**Table 70: Summary technical biomass resource potential (BDT/yr), 2017**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversion	Biosolids Landfilled (not in Total)	Biosolids Diverted	Total MSW Biomass Landfilled	Total MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Total Orchard and Vine	Total Field and Seed	Total Vegetable	Total Food Processing	Total Forestry	Dedicated Crop	
Alameda	392,000	313,500	78,900	-	22,400	353,650	-	4,900	4,900	-	2,700	100	-	160	8,400	-	
Alpine	34,000	33,000	800	-	-	400	-	700	700	-	-	-	-	-	32,600	-	
Amador	166,000	156,600	9,000	-	-	11,000	-	6,800	6,800	-	4,400	100	-	160	143,100	-	
Butte	710,000	692,600	17,200	-	-	50,000	-	7,300	7,050	550	54,700	203,600	10	99,680	294,500	-	
Calaveras	273,000	261,800	11,000	-	-	12,650	-	7,500	7,475	-	1,200	100	-	960	250,300	-	
Colusa	502,000	493,100	9,100	-	-	6,050	-	6,200	6,175	-	27,400	290,900	1,240	112,080	58,300	-	
Contra Costa	327,000	219,000	108,400	-	-	15,900	274,100	-	5,700	5,650	150	3,600	13,500	8,760	720	5,100	
Del Norte	171,000	161,600	9,200	-	-	400	4,700	-	8,300	8,275	4,650	-	-	-	157,400	-	
El Dorado	595,000	584,000	11,100	-	-	2,100	41,650	-	2,900	2,875	-	3,100	-	-	-	545,300	
Fresno	1,510,000	1,049,100	460,800	-	-	17,500	211,850	-	362,100	289,850	147,550	396,400	133,700	28,660	100,560	259,100	
Glenn	388,000	348,000	40,000	-	-	500	5,600	-	38,800	38,650	22,450	36,800	175,800	-	70,080	60,400	
Humboldt	1,366,000	1,332,700	33,800	-	-	1,000	22,600	-	29,300	29,275	16,450	-	-	-	80	1,313,500	
Imperial	510,000	268,600	241,600	-	-	3,100	74,000	-	201,100	200,075	7,700	2,900	62,600	23,110	960	142,400	
Inyo	150,000	138,600	11,500	-	-	-	7,600	-	5,400	5,350	-	-	-	20	1,760	135,300	
Kern	1,214,000	892,800	320,800	-	-	16,100	217,900	-	277,800	276,575	213,700	220,700	125,200	630	123,280	232,000	
Kings	546,000	245,700	300,500	-	-	2,200	30,600	-	292,600	273,275	230,100	41,800	138,000	1,900	38,080	1,000	
Lake	295,000	290,600	4,800	-	-	500	12,900	-	2,300	2,150	-	12,000	1,000	-	1,600	265,100	
Lassen	709,000	692,200	16,400	-	-	-	5,600	-	15,200	15,125	-	-	1,300	90	-	686,400	
Los Angeles	2,999,000	2,327,400	671,400	-	-	181,600	2,686,700	-	3,500	3,425	3,400	600	700	10	400	125,200	
Madera	612,000	451,800	160,700	-	-	1,000	45,350	-	148,400	133,725	98,100	166,200	10,000	410	47,600	193,500	
Marin	108,000	68,100	39,700	-	-	3,200	59,750	-	18,800	18,750	12,750	100	-	10	-	25,900	
Mariposa	174,000	165,200	8,400	-	-	200	3,650	-	7,700	7,650	-	200	300	-	-	161,500	
Mendocino	1,296,000	1,285,600	10,600	-	-	1,100	17,700	-	7,100	6,950	1,700	20,400	-	20	7,680	1,242,200	
Merced	888,000	339,500	548,700	-	-	2,400	73,900	-	500,200	447,000	344,950	97,400	47,100	2,900	161,760	2,500	
Modoc	463,000	435,600	27,000	-	-	-	1,700	-	26,300	26,250	-	-	8,500	400	-	425,700	
Mono	114,000	109,800	4,600	-	-	-	10,050	-	2,300	2,250	-	-	-	10	-	102,000	
Monterey	304,000	246,300	58,200	-	-	3,700	95,750	-	22,800	22,725	1,700	44,400	7,600	16,790	17,840	95,600	
Napa	240,000	228,600	11,700	-	-	2,100	41,600	-	2,500	2,500	-	48,200	-	-	14,560	131,300	
Nevada	331,000	325,500	5,400	-	-	1,100	18,650	-	1,700	1,700	-	400	-	-	-	309,000	
Orange	1,128,000	741,600	386,300	-	-	48,600	1,067,400	-	300	325	-	-	-	150	1,360	10,100	
Placer	367,000	344,700	22,400	-	-	-	81,300	-	6,500	6,350	950	1,500	18,600	-	6,800	252,300	
Plumas	676,000	671,200	5,200	-	-	200	5,150	-	4,200	4,200	-	-	-	-	-	666,800	
Riverside	1,256,000	848,700	407,100	-	-	52,800	766,200	-	159,300	122,625	90,100	25,700	14,200	7,320	1,520	228,700	
Sacramento	527,000	383,500	143,800	-	-	11,400	389,650	-	36,200	33,900	19,300	35,100	47,600	660	6,000	700	
San Benito	90,000	68,900	21,300	-	-	-	2,500	15,450	-	16,300	16,125	1,000	6,700	1,200	2,000	3,520	42,500
San Bernardino	1,507,000	1,115,300	391,500	-	-	32,600	628,700	-	199,500	184,025	135,800	2,800	1,600	440	1,600	639,500	
San Diego	1,310,000	1,026,300	283,900	-	-	57,800	951,400	-	27,300	11,000	5,000	21,400	700	1,020	-	250,500	
San Francisco	149,000	113,600	35,900	-	-	-	149,400	-	-	-	-	-	-	-	-	-	
San Joaquin	902,000	611,100	290,900	-	-	9,200	223,050	-	219,100	202,550	149,150	175,500	108,500	11,340	152,960	2,400	
San Luis Obispo	264,000	224,400	39,400	-	-	3,900	58,250	-	26,200	25,425	150	45,200	5,100	1,870	800	122,400	
San Mateo	191,000	156,500	34,400	-	-	1,400	150,800	-	900	925	-	100	300	120	-	37,300	
Santa Barbara	243,000	201,900	41,200	-	-	6,300	98,000	-	13,300	13,175	1,700	30,000	2,600	4,130	5,920	82,900	
Santa Clara	498,000	404,100	94,100	-	-	68,800	339,750	-	6,400	6,375	150	2,900	400	4,060	3,520	72,300	
Santa Cruz	150,000	139,100	10,900	-	-	-	46,450	-	800	750	150	2,900	-	880	80	98,900	
Shasta	966,000	944,300	22,200	-	-	2,200	43,350	-	13,600	13,625	-	500	8,400	130	480	897,800	
Sierra	196,000	193,800	2,300	-	-	-	800	-	2,100	2,125	-	-	-	-	-	193,200	
Siskiyou	1,137,000	1,115,300	22,100	-	-	200	7,750	-	20,500	20,525	1,700	-	17,800	140	-	1,091,000	
Solano	188,000	133,900	53,800	-	-	4,000	115,900	-	20,700	20,200	5,000	12,100	29,100	780	2,080	3,100	
Sonoma	584,000	503,100	80,600	-	-	2,100	110,000	-	56,600	50,100	36,550	65,500	300	20	10,800	338,400	
Stanislaus	818,000	411,600	406,600	-	-	15,400	148,050	-	374,500	347,100	249,700	118,700	16,000	2,180	131,360	12,000	
Sutter	344,000	334,500	9,600	-	-	1,700	18,900	-	5,200	5,150	750	33,200	206,200	620	78,320	-	
Tehama	417,000	388,100	28,900	-	-	600	12,950	-	26,400	26,275	6,250	23,700	3,700	-	14,160	335,500	
Trinity	743,000	741,000	1,900	-	-	-	2,000	-	1,500	1,500	-	100	-	-	-	739,300	
Tulare	1,540,000	641,300	898,300	-	-	9,800	112,250	-	875,800	861,075	663,250	204,600	106,500	700	29,920	200,000	
Tuolumne	390,000	372,400	17,300	-	-	700	10,500	-	15,300	4,675	-	-	-	-	-	363,200	
Ventura	320,000	257,700	61,900	-	-	16,200	237,600	-	2,700	2,725	-	20,800	1,900	3,730	2,400	34,200	
Yolo	245,000	220,200	25,100	-	-	3,000	52,100	-	9,300	9,050	3,000	26,100	100,800	3,140	28,400	22,500	
Yuba	278,000	257,800	19,900	-	-	1,200	19,200	-	16,000	15,975	4,600	17,400	66,100	-	34,160	123,600	
Other- not located	4,769,000	4,590,800	178,300	-	-	-	-	-	165,300	-	-	20,700	70,100	13,040	-	-	4,500,000
STATE Total	39,600,000	32,313,600	7,268,400	-	-	631,000	10,259,950	-	4,340,000	3,861,000	2,480,150	2,079,000	2,047,000	143,000	1,316,000	14,270,000	4,500,000

**Table 71: Summary Gross Biomass Resource Potential (BDT/yr), 2020**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversion	Biosolids Landfilled (not in Total)	Biosolids Diverted	Total MSW Biomass Landfilled	Total MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Orchard and Vine	Total Field and Seed	Total Vegetable	Total Food Processing	Total Forestry	Dedicated Crop	
Alameda	1,506,000	1,335,300	170,700	3,900	28,600	721,300	708,500	20,000	20,000	-	4,100	300	-	200	23,000	-	
Alpine	118,000	114,900	3,100	-	-	900	1,200	3,000	2,900	-	-	-	-	-	112,900	-	
Amador	287,000	253,900	33,500	-	-	23,100	23,500	29,000	28,600	-	6,800	100	-	200	204,700	-	
Butte	1,338,000	1,286,700	51,100	2,600	-	106,100	105,800	30,000	28,800	1,200	81,900	431,000	200	131,900	450,900	-	
Calaveras	448,000	408,900	39,200	-	-	26,400	23,200	32,000	31,300	-	1,800	100	-	1,200	363,400	-	
Colusa	985,000	928,800	56,300	-	-	12,900	12,100	28,000	26,600	-	41,600	623,500	24,900	148,200	93,900	-	
Contra Costa	1,148,000	907,900	239,700	10,300	20,700	570,200	465,400	23,000	23,400	400	5,300	26,300	21,300	900	14,500	-	
Del Norte	569,000	542,200	26,800	-	500	9,700	9,800	25,000	25,000	9,700	-	-	-	-	524,000	-	
El Dorado	931,000	900,900	30,200	200	2,700	87,500	87,900	13,000	12,200	-	4,600	-	-	-	735,400	-	
Fresno	3,935,000	2,396,700	1,538,300	-	23,300	450,900	450,600	1,079,000	919,900	314,100	602,900	256,500	335,500	124,800	611,500	-	
Glenn	774,000	653,300	120,600	-	700	12,000	11,800	118,000	116,900	47,800	55,400	373,500	-	92,800	109,700	-	
Humboldt	2,994,000	2,898,400	95,100	-	1,300	46,100	46,300	86,000	85,600	33,500	-	900	-	100	2,812,800	-	
Imperial	1,684,000	623,700	1,059,800	-	4,200	159,500	152,300	869,000	846,200	16,600	4,200	159,100	153,400	1,000	180,800	-	
Inyo	587,000	553,300	33,700	-	-	15,700	7,800	22,000	22,000	-	-	-	500	2,200	538,800	-	
Kern	2,987,000	2,134,300	852,200	-	21,500	467,300	467,400	749,000	728,300	458,500	338,000	348,500	12,300	159,300	423,200	-	
Kings	1,318,000	546,500	771,800	-	3,000	65,600	65,200	721,000	679,300	493,900	63,200	313,600	38,100	46,200	2,400	-	
Lake	514,000	499,800	14,300	-	600	27,000	26,700	9,000	9,000	-	17,800	1,900	-	2,100	429,000	-	
Lassen	922,000	854,900	67,000	300	-	11,600	11,700	63,000	62,700	-	-	2,800	1,700	-	831,100	-	
Los Angeles	11,103,000	9,734,300	1,369,100	40,100	231,300	5,475,900	5,109,000	8,000	7,000	6,900	900	1,400	200	500	276,200	-	
Madera	1,252,000	815,800	436,100	-	1,400	98,500	90,200	402,000	368,000	213,100	254,100	36,900	8,300	61,800	298,700	-	
Marin	326,000	232,800	93,300	-	4,000	120,000	96,600	51,000	49,700	25,600	200	1,500	300	-	52,500	-	
Mariposa	290,000	256,100	33,400	-	200	7,600	7,100	32,000	31,900	-	300	600	-	-	241,700	-	
Mendocino	2,908,000	2,873,000	34,600	-	1,500	36,500	36,200	27,000	25,200	3,500	30,700	-	400	9,600	2,765,700	-	
Merced	2,199,000	767,400	1,431,200	-	3,200	159,500	153,900	1,301,000	1,184,100	743,900	148,600	163,800	58,000	206,300	4,300	-	
Modoc	648,000	525,300	122,600	-	-	3,600	4,100	114,000	112,600	-	-	22,600	8,000	-	495,600	-	
Mono	252,000	237,400	15,000	-	-	21,300	20,700	10,000	9,600	-	-	-	100	-	200,300	-	
Monterey	1,177,000	706,100	470,900	1,700	4,700	196,400	196,900	90,000	89,700	3,500	67,700	15,500	342,800	22,300	240,700	-	
Napa	488,000	457,200	30,300	-	2,700	87,100	84,100	11,000	10,500	-	73,700	-	-	18,200	210,700	-	
Nevada	521,000	506,100	14,700	2,200	1,500	38,700	39,000	7,000	7,000	-	600	-	-	-	434,000	-	
Orange	4,041,000	3,243,200	798,100	7,000	62,500	2,198,700	1,743,000	1,000	1,400	-	100	-	-	2,200	1,800	32,000	-
Placer	842,000	781,800	59,900	4,200	-	173,300	173,000	26,000	25,000	2,000	2,300	39,200	100	9,100	418,700	-	
Plumas	1,006,000	987,000	19,100	-	200	10,600	10,900	17,000	17,100	-	-	-	-	-	967,400	-	
Riverside	4,159,000	3,166,000	992,600	-	71,600	1,664,200	1,416,900	424,000	336,900	195,700	37,600	30,800	46,300	1,600	465,600	-	
Sacramento	1,823,000	1,482,900	340,500	-	14,600	805,600	725,400	106,000	100,200	39,900	52,400	97,300	13,300	7,900	900	-	
San Benito	286,000	162,800	122,800	-	3,300	33,600	33,300	69,000	68,100	2,200	10,100	2,600	47,200	4,400	82,100	-	
San Bernardino	4,156,000	3,222,800	933,500	1,300	43,100	1,329,200	1,151,900	525,000	491,100	287,200	4,100	4,700	4,900	2,000	1,091,400	-	
San Diego	4,390,000	3,784,700	605,700	800	74,500	1,963,700	1,783,200	69,000	35,000	10,300	29,200	1,900	9,300	-	459,600	-	
San Francisco	587,000	514,400	72,400	22,100	-	301,800	285,000	-	-	-	-	-	-	-	-	-	
San Joaquin	2,367,000	1,510,300	857,100	-	12,500	483,600	437,300	594,000	555,100	323,500	268,100	241,000	131,900	194,600	4,400	-	
San Luis Obispo	687,000	518,600	168,400	-	5,000	119,200	119,700	107,000	103,800	300	68,400	9,000	38,300	1,000	219,400	-	
San Mateo	716,000	642,100	73,700	10,800	1,800	304,200	293,800	4,000	3,700	-	200	600	2,300	-	108,900	-	
Santa Barbara	825,000	638,800	185,900	-	8,000	199,600	187,300	52,000	50,200	3,500	44,800	7,800	85,400	7,400	232,400	-	
Santa Clara	1,671,000	1,450,000	220,700	4,400	88,000	695,000	650,300	26,000	25,800	300	4,500	1,000	23,700	4,500	177,700	-	
Santa Cruz	442,000	402,600	39,400	5,000	-	94,700	94,700	3,000	2,700	300	4,000	-	17,700	100	227,800	-	
Shasta	1,802,000	1,723,600	78,300	2,200	2,800	91,000	91,500	58,000	57,300	-	700	17,700	2,700	600	1,536,900	-	
Sierra	311,000	301,800	9,400	-	-	1,600	1,000	9,000	8,500	-	-	-	-	-	299,600	-	
Siskiyou	2,445,000	2,358,100	86,900	-	200	16,100	15,600	81,000	80,700	3,500	-	41,400	2,700	-	2,288,000	-	
Solano	654,000	488,600	165,000	7,100	5,200	241,100	216,800	82,000	73,600	10,400	18,000	67,000	15,800	2,700	5,000	-	
Sonoma	1,400,000	1,202,400	197,100	5,100	2,700	226,300	222,200	148,000	131,000	75,300	99,500	2,700	400	13,500	684,200	-	
Stanislaus	2,179,000	1,058,600	1,120,700	-	20,500	316,700	316,400	1,010,000	951,200	534,400	180,400	90,500	47,700	170,000	27,100	-	
Sutter	711,000	667,400	44,000	-	2,300	41,600	40,600	23,000	21,100	1,700	48,100	440,000	12,500	103,300	-	-	
Tehama	779,000	673,700	105,500	-	900	27,600	27,000	100,000	98,200	13,300	34,900	8,000	100	18,500	562,200	-	
Trinity	1,850,000	1,843,100	6,900	-	-	4,400	3,900	6,000	6,300	-	200	-	-	-	1,835,500	-	
Tulare	3,944,000	1,564,500	2,379,400	-	13,300	242,400	243,000	2,329,000	2,287,500	1,432,800	306,000	281,400	3,300	37,500	488,000	-	
Tuolumne	623,000	577,300	45,200	-	900	21,600	21,300	41,000	19,300	-	-	-	-	-	537,700	-	
Ventura	1,211,000	1,028,900	182,400	4,600	20,900	491,700	468,100	11,000	11,400	-	29,100	3,600	56,700	3,100	127,100	-	
Yolo	675,000	550,500	124,900	400	3,900	109,900	103,600	35,000	31,900	6,300	39,200	245,900	63,100	37,300	37,500	-	
Yuba	523,000	453,300	69,600	-	1,700	42,600	41,700	61,000	60,500	10,200	25,100	139,800	-	44,900	166,100	-	
Other- not located	6,800,000	5,205,500	1,599,600	-	-	-	-	1,387,000	-	-	29,800	175,700	212,600	-	-	5,000,000	
STATE Total	98,100,000	77,157,000	20,959,000	136,300	818,000	21,310,500	19,433,400	13,376,000	11,218,600	5,325,300	3,141,200	4,730,000	1,846,200	1,695,600	26,765,600	5,000,000	

**Table 72: Summary technical Biomass Resource Potential (BDT/yr), 2020**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversion	Biosolids Landfilled (not in Total)	Biosolids Diverted	Total MSW Biomass Landfilled	Total MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Orchard and Vine	Total Field and Seed	Total Vegetable	Total Food Processing	Total Forestry	Dedicated Crop	
Alameda	400,000	319,600	80,400	-	22,880	360,650	-	5,000	5,000	-	2,900	-	-	160	8,400	-	
Alpine	34,000	33,000	800	-	-	450	-	700	730	-	-	-	-	-	32,600	-	
Amador	167,000	157,300	9,500	-	-	11,550	-	7,200	7,150	-	4,700	-	-	160	143,100	-	
Butte	734,000	715,400	18,300	-	-	53,050	-	7,800	7,500	600	57,300	215,500	-	105,520	294,500	-	
Calaveras	274,000	262,200	11,500	-	-	13,200	-	7,900	7,830	-	1,300	-	-	960	250,300	-	
Colusa	527,000	517,600	9,700	-	-	6,450	-	6,700	6,660	-	29,100	306,900	1,300	118,560	58,300	-	
Contra Costa	339,000	226,000	113,000	-	16,560	285,100	-	6,000	5,950	200	3,700	12,500	9,300	720	5,100	-	
Del Norte	171,000	161,800	9,600	-	400	4,850	-	8,700	8,680	4,850	-	-	-	-	157,400	-	
El Dorado	598,000	585,800	11,700	-	2,160	43,750	-	3,100	3,060	-	3,200	-	-	-	545,300	-	
Fresno	1,560,000	1,072,000	487,600	-	18,640	225,450	-	385,400	308,510	157,050	422,000	119,700	29,500	99,840	259,100	-	
Glenn	406,000	363,100	42,700	-	-	560	6,000	41,400	41,180	23,900	38,800	184,400	-	74,240	60,400	-	
Humboldt	1,367,000	1,333,100	34,400	-	1,040	23,050	-	29,800	29,780	16,750	-	-	-	80	1,313,500	-	
Imperial	506,000	246,300	260,000	-	3,360	79,750	-	216,800	215,710	8,300	2,900	35,800	24,500	800	142,400	-	
Inyo	150,000	138,700	11,800	-	-	7,850	-	5,500	5,500	-	-	-	-	1,760	135,300	-	
Kern	1,266,000	921,700	344,100	-	17,200	233,650	-	298,000	296,700	229,250	236,600	120,300	600	127,440	232,000	-	
Kings	543,000	220,500	322,400	-	2,400	32,800	-	314,100	293,310	246,950	44,300	109,400	1,900	36,960	1,000	-	
Lake	296,000	290,700	5,100	-	480	13,500	-	2,400	2,260	-	12,500	100	-	1,680	265,100	-	
Lassen	709,000	692,300	17,000	-	-	5,800	-	15,700	15,680	-	-	1,200	100	-	686,400	-	
Los Angeles	3,053,000	2,368,700	684,200	-	185,040	2,737,950	-	3,600	3,480	3,450	600	100	-	400	125,200	-	
Madera	641,000	466,100	174,600	-	1,120	49,250	-	161,300	145,280	106,550	177,900	7,800	400	49,440	193,500	-	
Marin	108,000	68,200	39,900	-	-	3,200	60,000	-	18,900	18,830	12,800	100	-	-	25,900	-	
Mariposa	174,000	165,000	8,700	-	160	3,800	-	8,000	7,980	-	200	-	-	-	161,500	-	
Mendocino	1,298,000	1,287,200	11,000	-	1,200	18,250	-	7,400	7,180	1,750	21,500	-	-	7,680	1,242,200	-	
Merced	939,000	350,000	589,300	-	2,560	79,750	-	539,500	482,010	371,950	104,000	43,100	2,900	165,040	2,500	-	
Modoc	465,000	435,800	28,900	-	-	1,800	-	28,200	28,150	-	-	8,600	400	-	425,700	-	
Mono	115,000	110,200	4,900	-	-	10,650	-	2,400	2,410	-	-	-	-	-	102,000	-	
Monterey	309,000	249,800	59,700	-	3,760	98,200	-	23,400	23,310	1,750	47,400	6,000	17,200	17,840	95,600	-	
Napa	246,000	233,500	12,400	-	2,160	43,550	-	2,700	2,630	-	51,600	-	-	14,560	131,300	-	
Nevada	332,000	326,100	5,700	-	1,200	19,350	-	1,800	1,750	-	400	-	-	-	309,000	-	
Orange	1,161,000	763,400	398,100	-	50,000	1,099,350	-	400	350	-	-	-	200	1,440	10,100	-	
Placer	374,000	350,500	23,800	-	-	86,650	-	6,900	6,760	1,000	1,600	19,600	-	7,280	252,300	-	
Plumas	677,000	671,200	5,400	-	160	5,300	-	4,300	4,280	-	-	-	-	-	666,800	-	
Riverside	1,340,000	897,700	441,900	-	57,280	832,100	-	173,000	133,160	97,850	26,300	13,200	7,700	1,280	228,700	-	
Sacramento	542,000	393,400	148,800	-	11,680	402,800	-	37,500	35,030	19,950	36,700	45,800	700	6,320	700	-	
San Benito	93,000	69,900	23,500	-	-	2,640	16,800	-	17,800	17,580	1,100	7,100	600	2,400	3,520	42,500	-
San Bernardino	1,555,000	1,141,200	413,900	-	34,480	664,600	-	211,000	194,580	143,600	2,900	500	500	1,600	639,500	-	
San Diego	1,342,000	1,049,400	293,000	-	59,600	981,850	-	28,200	11,330	5,150	20,500	600	1,100	-	250,500	-	
San Francisco	151,000	114,700	36,200	-	-	150,900	-	-	-	-	-	-	-	-	-	-	
San Joaquin	950,000	635,100	315,000	-	10,000	241,800	-	237,700	219,660	161,750	187,700	103,100	11,700	155,680	2,400	-	
San Luis Obispo	266,000	226,200	40,300	-	4,000	59,600	-	26,800	26,030	150	47,900	3,000	1,900	800	122,400	-	
San Mateo	192,000	157,600	34,700	-	1,440	152,100	-	900	930	-	200	300	100	-	37,300	-	
Santa Barbara	246,000	204,200	42,200	-	-	6,400	99,800	-	13,600	13,430	1,750	31,300	2,100	4,300	5,920	82,900	-
Santa Clara	508,000	411,700	96,300	-	70,400	347,500	-	6,500	6,530	150	3,100	300	4,300	3,600	72,300	-	
Santa Cruz	151,000	139,800	11,100	-	-	47,350	-	800	760	150	2,800	-	900	80	98,900	-	
Shasta	970,000	946,600	23,300	-	2,240	45,500	-	14,400	14,330	-	500	8,900	100	480	897,800	-	
Sierra	196,000	193,800	2,300	-	-	800	-	2,100	2,130	-	-	-	-	-	193,200	-	
Siskiyou	1,138,000	1,115,100	22,800	-	160	8,050	-	21,100	21,060	1,750	-	17,500	100	-	1,091,000	-	
Solano	193,000	137,200	56,000	-	4,160	120,550	-	21,500	21,000	5,200	12,600	28,300	800	2,160	3,100	-	
Sonoma	593,000	509,800	83,000	-	2,160	113,150	-	58,300	51,580	37,650	69,600	300	-	10,800	338,400	-	
Stanislaus	866,000	430,600	435,000	-	16,400	158,350	-	400,700	371,400	267,200	126,300	13,500	2,400	136,000	12,000	-	
Sutter	362,000	351,100	10,700	-	-	1,840	20,800	-	5,800	5,710	850	33,700	216,400	600	82,640	-	
Tehama	421,000	390,200	30,800	-	720	13,800	-	28,100	27,880	6,650	24,500	3,600	-	14,800	335,500	-	
Trinity	743,000	741,200	2,100	-	-	2,200	-	-	1,600	1,580	100	-	-	-	739,300	-	
Tulare	1,627,000	656,300	970,300	-	10,640	121,200	-	946,000	930,080	716,400	214,200	103,800	700	30,000	200,000	-	
Tuolumne	390,000	372,600	17,800	-	720	10,800	-	15,700	4,830	-	-	-	-	-	363,200	-	
Ventura	327,000	263,200	64,200	-	16,720	245,850	-	2,900	2,850	-	20,300	1,000	3,900	2,480	34,200	-	
Yolo	244,000	217,100	26,400	-	3,120	54,950	-	9,800	9,560	3,150	27,500	92,600	3,200	29,840	22,500	-	
Yuba	286,000	264,000	22,000	-	1,360	21,300	-	17,700	17,680	5,100	17,600	68,500	-	35,920	123,600	-	
Other- not located	4,768,000	4,582,100	185,900	-	-	-	-	171,500	-	-	20,900	61,200	14,400	-	-	4,500,000	
STATE Total	40,400,000	32,715,000	7,686,000	-	654,400	10,655,250	-	4,600,000	4,136,280	2,662,650	2,199,000	1,976,000	150,000	1,356,000	14,300,000	4,500,000	

# CHAPTER 3:

## Power Generation Potentials

Estimates of gross and technical energy and electric power potential from biomass were developed from the resource projections for years 2007, 2010, 2017, and 2020. Principal means of converting biomass to electricity today are direct combustion steam cycles and anaerobic digesters or landfills fueling engines and boilers. Many different types of thermal and biological systems for converting biomass are in development. For this assessment, energy and power potentials were developed for each biomass type by assignment to either generic thermal or biological conversion using the methods outlined below. This classification reflects general trends based on moisture content and current and perceived future waste disposal practices. In the case of thermal systems, efficiencies were assumed to improve over time as new technologies and new enhancements become available. A sensitivity analysis examining possible improvements due to the adoption of bioreactor landfills was performed for landfill gas technologies.

### 3.1 Energy and Power Capacities

Electric power generation capacities were derived from energy in biomass, landfill gas, or digester gas according to:

$$M_{i,j} = \left[ \frac{E_{i,j} \eta_{i,j}}{8760 h_{i,j}} \right] \quad [3]$$

where

$M_{i,j}$  = power generation capacity from biomass type  $i$  in year  $j$  (MWe)

$E_{i,j}$  = annual energy (total heating value) in biomass type  $i$  in year  $j$  (MWh  $y^{-1}$ )

$\eta_{i,j}$  = overall net generation efficiency for biomass type  $i$  in year  $j$  (--)

$h_{i,j}$  = power plant capacity factor for biomass type  $i$  in year  $j$  (--)

and 8760 is the number of hours in the year.

The energy in biomass was determined from gross and technical resource potentials in each year:

$$E_{i,j} = \frac{1}{3.6} [q_{i,j} Q_i] \quad [4]$$

$q_{i,j}$  = dry mass of biomass type  $i$  produced in year  $j$  (Mg  $y^{-1}$ , Mg = metric ton)

$Q_{i,j}$  = higher heating value of biomass type  $i$  (MJ kg<sup>-1</sup> dry basis)

and the factor 1/3.6 is a conversion factor (MWh kg y Mg<sup>-1</sup> MJ<sup>-1</sup>)

Alternatively, for input in conventional units,

$$E_{i,j} = 5.861 \times 10^{-4} [q_{i,j} Q_i] \quad [4a]$$

$q_{i,j}$  = dry mass of biomass type  $i$  produced in year  $j$  (BDT/y)

$Q_i$  = constant volume higher heating value of biomass type  $i$  (Btu/lb dry basis)

For landfill gas and digester gas, the annual energy in Equation [3] was replaced with equation [4b] or [4c]:

$$E_{gas,j} = \frac{1}{3600} [q_{gas,j} Q_{gas}] \quad [4b]$$

$q_{gas,j}$  = volume of gas produced in year  $j$  (m<sup>3</sup> y<sup>-1</sup>)

$Q_{gas}$  = volumetric constant pressure higher heating value of gas (MJ m<sup>-3</sup>)

and the factor 1/3600 is a conversion factor (h s<sup>-1</sup> or MWh MJ<sup>-1</sup>)

or in conventional units,

$$E_{gas,j} = 2.931 \times 10^{-7} [q_{gas,j} Q_{gas}] \quad [4c]$$

$q_{gas,j}$  = volume of gas produced in year  $j$  (ft<sup>3</sup>/y)

$Q_{gas}$  = volumetric constant pressure higher heating value of gas (Btu/ft<sup>3</sup>)

## 3.2 Generation Potentials

### 3.2.1 Thermal and Biological Conversion Classifications

Biomass assigned to thermal and biological conversion categories varies for the gross and technical analyses (Table 73). Primary differences are for currently landfilled municipal solid waste fractions. The gross potential estimate assumes that dry materials currently landfilled could be diverted to thermal conversion systems and wet materials currently landfilled could be diverted to higher rate

digestion systems. The technical potential assumes these materials will continue to be landfilled and energy recovery is through landfill gas utilization. The conversion assumptions are described in more detail under section 3.2.3.

### 3.2.2 Heating Values

Higher heating values used in the analysis are listed according to biomass type in Tables 74 – 80.<sup>14</sup> All values listed are dry basis. The reporting precision varies based on whether biomass-specific data were available or utilized. Where specific data were not available, approximate values based on related materials were utilized. For woods, a value of 20 MJ kg<sup>-1</sup> or 8597 Btu/lb was used, for vegetative matter (e.g., vegetable crop residues) a value of 18 MJ kg<sup>-1</sup> or 7738 Btu/lb was used.

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<sup>14</sup> Specific data are from Jenkins, B.M, 1993, Properties of biomass, Vol. 2, EPRI TR102107, Electric Power Research Institute, Palo Alto, CA; the Phyllis on-line database of biomass properties:

<http://www.ecn.nl/phyllis/>; Themelis, N. J., Kim, Y. H., and Brady, M. H., 2002, Energy recovery from New York City municipal solid wastes, Waste Management and Research, 20(3), 223-233; and Tchobanoglous, G., Theisen, H. and Vigil, S., 1993, Integrated Solid Waste Management, Chapter 4, McGraw-Hill, New York.

**Table 73: Conversion Classifications for Gross and Technical Power Potentials**

Resource Category	Gross Potential	Technical Potential
Biosolids: landfilled	Included in MSW Other Landfilled	Included in MSW Other Landfilled
Biosolids: diverted	Thermochemical	Thermochemical
MSW: Waste in-place (2003)	Landfill gas	Landfill gas
MSW: paper/cardboard landfilled	Thermochemical	Landfill gas
MSW: lumber landfilled	Thermochemical	Landfill gas
MSW: leaves, grass, trimmings, prunings, stumps landfilled (green waste)	Biochemical	Landfill gas
MSW: other landfilled	Thermochemical	Landfill gas
MSW: food waste landfilled	Biochemical	Landfill gas
MSW: diverted	Thermochemical	Thermochemical
Animal manure	Biochemical	Biochemical
Orchard and Vineyard	Thermochemical	Thermochemical
Field and Seed	Thermochemical	Thermochemical
Vegetable	Biochemical	Biochemical
Food Processing-meat	Biochemical	Biochemical
Food Processing-others	Thermochemical	Thermochemical
Forest	Thermochemical	Thermochemical
Dedicated Crop	Thermochemical	Thermochemical

**Table 74: Higher Heating Values of Orchard and Vineyard Residues**

Orchard and Vineyard Residues	Higher Heating Value	
	(MJ/kg dry basis)	(Btu/lb dry basis)
Apples	20	8597
Apricots	20	8597
Avocados	20	8597
Cherries	20	8597
Dates	20	8597
Figs	20	8597
Grapes	19	8168
Kiwifruit	20	8597
Nectarines	20	8597
Olives	20	8597
Peaches	20	8597
Pears	20	8597
Persimmons	20	8597
Plums & Prunes	20	8597
Pomegranates	20	8597
All Citrus	20	8597
Almonds	20	8597
Pecans	20	8597
Pistachios	20	8597
Walnuts	20	8597
Fruits & Nuts, unspecified	20	8597

**Table 75: Higher Heating Values of field and Seed Crop Residues**

Field and Seed Crop Residues	Higher Heating Value	
	(MJ/kg dry basis)	(Btu/lb dry basis)
Corn	17.65	7587
Sorghum	15.4	6620
Wheat	17.51	7527
Barley	17.31	7441
Oats	17	7308
Rice	16.28	6998
Safflower	19.23	8266
Sunflower	18	7738
Cotton	18.26	7849
Beans	17.46	7506
Lima Beans	17.46	7506
Cowpeas & Southern Peas	17.46	7506
Potatoes	18	7738
Sweetpotatoes	18	7738
Sugar Beets	18	7738
Unspecified Field & Seed	18	7738
Alfalfa Seed	18.45	7931
Bermuda Grass Seed	18	7738

**Table 76: Higher Heating Values of Vegetable Crop Residue**

Vegetable Crop Residues	Higher Heating Value	
	(MJ/kg dry basis)	(Btu/lb dry basis)
Artichokes	18	7738
Asparagus	18	7738
Green Lima Beans	18	7738
Berries	18	7738
Snap Beans	18	7738
Broccoli	18	7738
Cabbage	18	7738
Cantaloupe Melons	18	7738
Carrots	18	7738
Cauliflower	18	7738
Celery	18	7738
Cucumbers	18	7738
Garlic	18	7738
Honeydew Melons	18	7738
Lettuce and Romaine	18	7738
Dry Onions	18	7738
Green Onions	18	7738
Hot Peppers	18	7738
Sweet Peppers	18	7738
Spices & herbs	18	7738
Spinach	18	7738
Squash	18	7738
Sweet Corn	18	7738
Tomatoes	18	7738
Unspecified vegetables	18	7738

**Table 77: Higher Heating Values of Food Processing Residue**

Food Processing Residues	Higher Heating Value	
	(MJ/kg dry basis)	(Btu/lb dry basis)
Almond Shell	19.38	8331
Walnut Shell	20.18	8675
Garlic & Onions	15	6448
Stone Fruit	21.74	9345
Other Fruit	15	6448
Olive	21.39	9195
Winery	15.4	6620
Rice Hull	16.14	6938
Cotton Gin Waste	16.42	7058
Tomatoes	15	6448
Meat Processing	20	8597

**Table 78: Higher Heating Values of Animal Manures**

Animal Manures	Higher Heating Value	
	(MJ/kg dry basis)	(Btu/lb dry basis)
Beef Cow Manure	17.25	7414
Milk Cow Manure	17.00	7308
Other Cattle Manure	16.66	7161
Swine	15.91	6839
Poultry Layer Chickens	15.50	6663
Poultry Broiler Chickens	15.91	6839
Poultry Turkeys	15.65	6727
Sheep and Lambs	17.05	7331
Horses and other Equine	14.00	6018

**Table 79: Higher Heating Values of Forest and dedicated Crop Biomass**

Forestry and Dedicated Crops	Higher Heating Value	
	(MJ/kg dry basis)	(Btu/lb dry basis)
Forest Thinnings and Slash	21	9027
Forest Other	20	8597
Chaparral	18.61	8000
Mill Residue	20	8597
Dedicated Biomass Crops	19	8168

**Table 80: Higher Heating Values of Municipal Waste Biomass**

Municipal Wastes	Higher Heating Value	
	(MJ/kg dry basis)	(Btu/lb dry basis)
Biosolids Landfilled	15.4	6620
Biosolids Diverted	15.4	6620
Paper/Cardboard Landfilled	17.8	7642
C&D Lumber Landfilled	19.3	8304
Leaves, Grass, Prunings, Trimmings, Stumps Landfilled	15.0	6448
Other Composite Landfilled	8.9	3806
Food Waste Landfilled	14.0	6018
MSW Biomass Diverted	16.7	7179

Heating values for animal manures were derived from a regression model based on ash content,<sup>15</sup> but were developed along with conversion efficiencies for the purposes of applying a consistent computational methodology to the resource data using total solids. Generation potential was actually derived from considerations of the biodegradability of the volatile solids (organic) fraction via anaerobic digestion by manure type as described below under conversion efficiencies. Similar methodology was employed for landfill gas and sewage digester gas.

### 3.2.3 Conversion Efficiencies and related Assumptions

Average net generation efficiencies,  $\eta_{ij}$ , for thermal conversion were varied by year as indicated in Table 81. The efficiency was set at 20% through 2007 and then increased through 2017 under the assumption of improved technology (e.g., continued efficiency upgrading for existing facilities, additions of higher efficiency technologies such as integrated gasification combined cycles).

Efficiency is not escalated beyond 2017. The assumption of increasing efficiency for thermal systems over time may be optimistic and so inflate the generation potentials in 2010 and 2017. Increasing additions of small modular and other distributed technologies operating at lower electrical efficiencies but at improved economies compared with larger centralized facilities could lead to lower aggregate electrical efficiencies. Smaller systems will not necessarily operate at lower efficiencies, and in combined heat and power installations overall conversion efficiencies will typically be substantially higher than independent power generation at any scale. For these reasons, the estimates of gross and technical power generation reported here should be used only as order of magnitude measures of potential.

**Table 81: Conversion Efficiencies by Year for Biomass Thermal Conversion**

Year	Net conversion efficiency (%)	Heat Rate (Btu/kWh)
2005	20	17,060
2010	25	13,648
2017, 2020	30	11,373

Net efficiencies for bioconversion systems were derived on the basis of the biodegradability of the volatile solids fraction of the biomass. Theoretical yield of biogas was assumed to be 12 ft<sup>3</sup>/lb VS destroyed (0.75 m<sup>3</sup> kg<sup>-1</sup> VS destroyed).

Biodegradable fractions for animal manures vary from 0.45 for cattle to 0.76 for poultry (Table 82).<sup>16</sup> The biodegradable fraction is expressed as the ratio of volatile solids destroyed per unit volatile solids in the biomass (lb VS destroyed/lb VS). Overall conversion efficiencies assume a biogas heating value of 700 Btu/ft<sup>3</sup> (26.1 MJ m<sup>-3</sup>) and a biogas to electricity conversion efficiency of 30% (heat rate of 11,373

<sup>15</sup> Jenkins, B.M, 1993, Properties of biomass, Vol. 2, EPRI TR102107, Electric Power Research Institute, Palo Alto, CA

<sup>16</sup> Loehr, R.C. 1984. Pollution control for agriculture. Academic Press, Orlando.

Btu/kWh). The conversion assumptions are equivalent to biomethane potentials of 3.8 to 6.4 ft<sup>3</sup> CH<sub>4</sub>/lb VS (0.24 – 0.40 m<sup>3</sup>CH<sub>4</sub> kg<sup>-1</sup> VS). By comparison, the theoretical biomethane potential of glucose is 6.0 ft<sup>3</sup> CH<sub>4</sub>/lb (0.37 m<sup>3</sup>CH<sub>4</sub> kg<sup>-1</sup>) and 6.6 ft<sup>3</sup> CH<sub>4</sub>/lb (0.42 m<sup>3</sup>CH<sub>4</sub> kg<sup>-1</sup>) for cellulose (with the addition of 1 mole of water per mole cellulose). The assumption of a constant biogasification rate of 12 ft<sup>3</sup>/lb VS destroyed may tend to overestimate at higher biodegradabilities although the estimate is likely good within an overall error of 30% and the methane potentials are consistent with the biodegradability source data. Resulting power generation per animal ranges from about 1 We for chickens to more than 100 We for dairy cattle and horses (Table 82).

Annual landfill gas generation rates were derived from estimates of waste in-place for each landfill in the state and a waste conversion of 15% over 30 years. Heating value of landfill gas was assumed to be 500 Btu/ft<sup>3</sup> (18.6 MJ m<sup>-3</sup>). The equivalent biomethane potential under these assumptions is 0.9 ft<sup>3</sup> CH<sub>4</sub>/lb total wet solids (0.06 m<sup>3</sup> CH<sub>4</sub> kg<sup>-1</sup>) or 2.1 ft<sup>3</sup> CH<sub>4</sub>/lb VS (0.13 m<sup>3</sup> CH<sub>4</sub> kg<sup>-1</sup> VS) using the waste composition of Table 52. Waste in-place was escalated from a year 2000 base estimate using a constant annual input equal to the year 2000 waste disposal rate to obtain gas generation rates for 2003 – 2017. This assumption implies a declining per capita waste disposal rate and potentially leaves another roughly 20% of disposal available by 2017 for other conversion. Landfill gas to electricity conversion efficiency was also assumed to be 30% (heat rate of 11,373 Btu/kWh). County level generation is the aggregate of individual site estimates within each county. Technical generation potential assumes 67% recovery of landfill gas.<sup>17</sup> As described later, another estimate of landfill gas potential was made using a somewhat more detailed modeling scheme to test the sensitivity of the assumptions and compare conventional and bioreactor concepts. The results for conventional landfilling by the alternate model are similar to the results obtained by the constant rate estimate described above.

For sewage treatment, annual energy from digester gas was computed from the influent waste water flow rate for each facility and an assumed average strength of 1,414 lbs biochemical oxygen demand (BOD) per million gallons (169 mg BOD L<sup>-1</sup>)<sup>18</sup> with a BOD biodegradability of 80%. Biogas heating value was assumed to be 600 Btu/ft<sup>3</sup> (22.4 MJ m<sup>-3</sup>). Equivalent biomethane potential is 5.8 ft<sup>3</sup> CH<sub>4</sub>/lb BOD (0.36 m<sup>3</sup> CH<sub>4</sub> kg<sup>-1</sup> BOD). As with manure digestion and landfill gas, the assumed conversion efficiency of biogas to electricity was 30% (heat rate of 11,373 Btu/kWh). County level generation is the aggregate of individual site estimates within each county. Technical capacity is based on 67% recovery.

For gross power generation estimates from biomass in MSW, the two fractions (green waste and food waste) assumed to be converted by higher rate biological systems were assigned net conversion efficiencies of 15%.

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<sup>17</sup> US EPA AP-42.

<sup>18</sup> Crites, R. and G. Tchobanoglous, 1998. Small and decentralized waste water treatment systems. McGraw-Hill, Boston.

**Table 82: Biodegradability and Overall Conversion Efficiencies for Animal Manures**

Animal type	Ratio VS/TS (%)	Biodegradable fraction (-)	Overall Bioconversion-to-Electricity Efficiency (%)	Average Power per Animal (MWe)
Beef Cows	84.71	0.45	13.0	79.8
Dairy Cows - Lactating	83.33	0.45	12.9	138.5
Other Cattle	81.43	0.45	12.9	75.1
Swine	77.27	0.73	20.8	25.8
Poultry (Layer Chickens)	75.00	0.76	21.6	1.1
Poultry (Broiler Chickens)	77.27	0.76	21.6	0.8
Poultry (Turkeys)	75.83	0.76	21.6	3.2
Sheep and lambs	83.64	0.73	21.0	12.4
Horses and other equine	66.67	0.45	12.6	138.5

### 3.2.4 Capacity Factors

Capacity factor defines the fraction of rated power capacity for a system achieved over the year. For these estimates, the capacity factor was set at 85% for all years and all conversion types.

## 3.3 Generation Estimates

Estimated gross and technical power generation potentials (MWe) for 2007, 2010, 2017, and 2020 are listed in Table 83 – 90. As noted earlier, gross power potential is based on full diversion from landfill of biomass in MSW. Gross potential therefore includes only the landfill gas to energy (LFGTE) potential based on waste in-place as of 2007. The constant rate landfill gas generation model as described in section 3.2.3 above results in a constant gas generation over the period, whereas if no additional waste were landfilled gas generation rate would be expected to decline. This is explored later with the alternative model. The technical generation estimate assumes waste continues to be landfilled. These assumptions result in the technical generation potential from landfill exceeding the gross generation from landfill by 2020 because of the greater amount of waste in place in the latter case. The total gross generation from MSW still exceeds the technical generation, however. Total gross generation potential ranges from 9,480 MWe in 2007 to 15,940 MWe in 2020. Technical potential exclusive of existing capacity ranges from 3,820 MWe in 2007 to 6,800 in 2020.

Energy generation potentials (MWh) for the same years are listed in Tables 91 – 98. Total gross potential ranges from 70 TWh in 2007 to 119 TWh in 2020 (TWh = million MWh). Technical electrical energy potential ranges from 28 to 51 TWh over the same time interval. Current electrical energy demand in California is approximately 295 TWh.<sup>19</sup>

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<sup>19</sup> California Energy Commission,

[http://www.energy.ca.gov/electricity/gross\\_system\\_power.html](http://www.energy.ca.gov/electricity/gross_system_power.html) (gross system power)

[http://www.energy.ca.gov/electricity/electricity\\_generation.html](http://www.energy.ca.gov/electricity/electricity_generation.html)

**Table 83: Summary Gross Power Generation Potentials (MWe) by Principal Resource Category, 2007**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversion	Biosolids Landfilled (not in Total)	Biosolids Diverted	MSW Biomass Landfilled	MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Orchard and Vine	Field and Seed	Food Processing	Forestry	Dedicated Crop	
Alameda	154	142	12	0	3	71	76	1	1	-	0	0	-	0	3	-
Alpine	16	15	0	-	0	0	0	0	0	-	-	-	-	-	15	-
Amador	34	32	2	-	-	2	2	2	2	-	1	0	-	0	28	-
Butte	140	137	3	0	-	9	10	2	2	0	9	37	-	12	61	-
Calaveras	56	53	2	-	-	2	2	2	2	-	0	0	-	0	49	-
Colusa	91	87	4	-	-	1	1	2	1	-	4	55	2	13	12	-
Contra Costa	107	90	17	1	2	51	46	1	1	0	1	4	1	0	2	-
Del Norte	74	73	2	-	0	1	1	1	1	1	1	-	-	-	71	-
El Dorado	117	115	2	0	0	8	8	1	1	-	1	-	-	0	99	-
Fresno	380	276	104	-	2	37	40	66	52	18	61	48	30	15	83	-
Glenn	72	65	7	-	0	1	1	7	7	3	6	34	-	8	15	-
Humboldt	396	390	7	-	0	5	5	6	6	2	-	0	-	0	381	-
Imperial	129	70	60	-	0	12	13	46	44	1	1	23	11	0	23	-
Inyo	72	70	2	-	-	1	1	1	1	-	0	-	-	0	68	-
Kern	277	229	48	-	2	37	40	42	40	25	33	50	1	17	55	-
Kings	118	74	44	-	0	5	6	40	37	27	7	50	3	7	0	-
Lake	65	64	1	-	0	2	3	1	1	-	2	0	-	0	57	-
Lassen	116	112	4	0	-	1	1	4	4	-	-	0	-	-	110	-
Los Angeles	1,146	1,041	104	4	22	540	547	1	0	0	0	0	0	0	35	-
Madera	114	90	24	-	0	7	7	22	19	11	25	5	1	6	40	-
Marin	35	27	7	-	0	12	11	4	4	2	0	0	-	-	7	-
Mariposa	36	34	2	-	0	1	1	2	2	-	0	0	-	-	32	-
Mendocino	387	385	2	-	0	3	4	2	2	0	3	-	-	1	374	-
Merced	163	81	82	-	0	12	13	73	63	40	15	24	4	21	1	-
Modoc	76	69	6	-	-	0	0	6	6	-	-	3	0	-	66	-
Mono	30	29	1	-	-	2	2	1	1	-	-	-	0	-	26	-
Monterey	114	81	34	0	0	19	20	6	6	0	7	3	25	2	32	-
Napa	54	52	2	-	0	8	8	1	1	-	7	-	-	2	28	-
Nevada	67	66	1	0	0	4	4	0	0	-	0	-	-	-	59	-
Orange	393	330	62	1	6	204	178	0	0	-	0	-	0	0	4	-
Placer	92	88	3	0	-	14	15	1	1	0	0	3	0	1	57	-
Plumas	134	133	1	-	0	1	1	1	1	-	-	-	-	-	131	-
Riverside	340	281	59	-	5	123	115	24	17	10	5	5	3	0	59	-
Sacramento	176	152	24	-	1	74	73	7	6	3	6	12	1	1	0	-
San Benito	24	18	6	-	0	3	3	4	3	0	1	0	2	0	11	-
San Bernardino	391	332	59	0	4	111	105	31	28	17	0	1	0	0	138	-
San Diego	441	396	45	0	7	183	181	6	2	1	5	0	1	-	59	-
San Francisco	63	57	6	2	-	31	32	-	-	-	-	-	-	-	-	-
San Joaquin	195	144	51	-	1	36	36	32	29	17	27	31	11	20	1	-
San Luis Obisp	72	61	11	-	0	12	13	7	7	0	7	2	2	0	29	-
San Mateo	80	74	6	1	0	31	33	0	0	-	0	0	0	-	15	-
Santa Barbara	87	74	13	-	1	20	20	4	3	0	5	1	6	1	30	-
Santa Clara	172	156	16	0	8	68	69	2	2	0	0	0	1	0	24	-
Santa Cruz	52	50	3	0	-	9	10	0	0	0	1	-	1	0	31	-
Shasta	229	225	5	0	0	8	9	3	3	-	0	2	-	0	207	-
Sierra	41	41	1	-	-	0	0	1	1	-	-	-	-	-	40	-
Siskiyou	323	317	6	-	0	2	2	5	5	0	-	5	0	-	309	-
Solano	61	50	12	1	0	22	21	5	5	1	2	8	1	0	1	-
Sonoma	159	145	14	0	0	21	23	10	9	5	10	0	-	1	92	-
Stanislaus	166	102	64	-	2	25	27	57	52	30	19	11	3	18	4	-
Sutter	64	61	3	-	0	3	3	1	1	0	6	39	1	9	-	-
Tehama	93	87	6	-	0	2	2	6	6	1	4	1	-	2	76	-
Trinity	249	249	0	-	-	0	0	0	0	-	0	-	-	-	248	-
Tulare	307	179	127	-	1	19	20	124	121	76	34	37	0	5	66	-
Tuolumne	80	76	4	-	0	2	2	4	1	-	-	-	0	-	72	-
Ventura	121	108	13	0	2	46	47	1	1	-	4	0	4	0	17	-
Yolo	64	55	8	0	0	9	10	2	2	0	4	25	5	4	5	-
Yuba	51	48	3	-	0	3	3	3	3	0	3	12	-	4	22	-
Not located	118	24	94	-	-	-	-	81	-	-	4	21	12	-	-	-
STATE Total	9,478	8,162	1,311	13	73	1,939	1,930	766	618	292	330	556	133	175	3,576	-

**Table 84: Summary Technical Power Generation Potentials (MWe) by principal Resource Category, 2007**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversion	Biosolids Landfilled (not in Total)	Biosolids Diverted	MSW Biomass Landfilled	MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Orchard and Vine	Field and Seed	Vegetable	Food Processing	Forestry	Dedicated Crop	
Alameda	40	34	6	-	2	36	-	0	0	-	0	0	-	0	1	-	
Alpine	4	4	0	-	-	0	-	0	0	-	-	-	-	-	4	-	
Amador	21	21	1	-	-	1	-	0	0	-	0	0	-	0	19	-	
Butte	79	78	1	-	-	4	-	0	0	-	6	19	-	10	40	-	
Calaveras	35	35	1	-	-	1	-	0	0	-	0	0	-	0	34	-	
Colusa	49	49	1	-	-	1	-	0	0	-	3	27	0	10	8	-	
Contra Costa	31	23	8	-	1	25	-	0	0	0	0	2	1	0	1	-	
Del Norte	22	22	1	-	0	0	-	1	1	0	-	-	-	-	21	-	
El Dorado	78	77	1	-	0	4	-	0	0	-	0	-	-	0	74	-	
Fresno	158	126	32	-	1	19	-	24	17	9	43	22	2	12	35	-	
Glenn	39	36	2	-	0	0	-	2	2	1	4	17	-	7	8	-	
Humboldt	182	180	2	-	0	2	-	2	2	1	-	-	-	0	178	-	
Imperial	46	31	14	-	0	6	-	11	11	0	0	8	2	0	18	-	
Inyo	18	18	1	-	-	1	-	0	0	-	0	-	-	0	17	-	
Kern	121	102	19	-	1	19	-	16	16	13	23	18	0	14	30	-	
Kings	53	34	18	-	0	3	-	18	16	14	5	22	0	6	0	-	
Lake	38	38	0	-	0	1	-	0	0	-	1	0	-	0	35	-	
Lassen	93	91	1	-	-	1	-	1	1	-	-	0	-	-	91	-	
Los Angeles	304	252	52	-	18	270	-	0	0	0	0	0	0	0	0	16	-
Madera	63	53	10	-	0	4	-	9	8	6	18	2	0	5	26	-	
Marin	11	8	3	-	0	6	-	1	1	1	0	-	-	-	4	-	
Mariposa	23	22	1	-	0	0	-	0	0	-	0	0	-	-	22	-	
Mendocino	173	173	1	-	0	2	-	0	0	0	2	-	-	1	168	-	
Merced	73	38	35	-	0	6	-	30	26	20	11	8	0	17	0	-	
Modoc	59	58	2	-	-	0	-	2	2	-	-	1	0	-	57	-	
Mono	14	14	0	-	-	1	-	0	0	-	-	-	0	-	13	-	
Monterey	33	29	4	-	0	9	-	2	2	0	5	1	1	2	13	-	
Napa	28	27	1	-	0	4	-	0	0	-	5	-	-	2	17	-	
Nevada	44	43	0	-	0	2	-	0	0	-	0	-	-	-	42	-	
Orange	108	77	31	-	5	102	-	0	0	-	0	-	0	0	1	-	
Placer	44	43	1	-	-	7	-	0	0	0	0	2	0	1	34	-	
Plumas	91	91	0	-	0	1	-	0	0	-	-	-	-	-	90	-	
Riverside	111	85	26	-	4	62	-	10	7	5	3	2	1	0	29	-	
Sacramento	52	41	11	-	1	37	-	2	2	1	4	6	0	1	0	-	
San Benito	9	8	1	-	0	1	-	1	1	0	1	0	0	0	6	-	
San Bernardino	153	126	27	-	3	55	-	13	11	8	0	0	0	0	81	-	
San Diego	135	113	22	-	5	91	-	2	1	0	3	0	0	-	32	-	
San Francisco	15	13	3	-	-	15	-	-	-	-	-	-	-	-	-	-	
San Joaquin	82	64	18	-	1	18	-	13	11	8	19	14	1	16	0	-	
San Luis Obisp	30	27	3	-	0	6	-	2	2	0	5	1	0	0	16	-	
San Mateo	21	18	3	-	0	16	-	0	0	-	0	0	0	-	5	-	
Santa Barbara	27	24	3	-	1	10	-	1	1	0	3	0	0	1	11	-	
Santa Clara	51	44	7	-	7	34	-	0	0	0	0	0	0	0	10	-	
Santa Cruz	19	18	1	-	-	5	-	0	0	0	0	-	0	0	13	-	
Shasta	127	126	1	-	0	4	-	1	1	-	0	1	-	0	121	-	
Sierra	26	26	0	-	-	0	-	0	0	-	-	-	-	-	26	-	
Siskiyou	152	150	2	-	0	1	-	1	1	0	-	2	0	-	147	-	
Solano	18	14	4	-	0	11	-	1	1	0	1	3	0	0	0	-	
Sonoma	69	63	6	-	0	11	-	4	3	2	7	0	-	1	46	-	
Stanislaus	68	43	25	-	1	13	-	23	20	15	13	2	0	14	2	-	
Sutter	33	33	1	-	0	1	-	0	0	0	4	19	0	7	-	-	
Tehama	53	51	2	-	0	1	-	2	2	0	3	0	-	2	45	-	
Trinity	100	100	0	-	-	0	-	0	0	-	0	-	-	-	100	-	
Tulare	130	78	52	-	1	9	-	51	49	38	24	14	0	4	27	-	
Tuolumne	51	50	2	-	0	1	-	1	0	-	-	-	0	0	49	-	
Ventura	33	28	4	-	2	23	-	0	0	-	3	0	0	0	4	-	
Yolo	25	23	2	-	0	5	-	1	1	0	3	10	0	3	3	-	
Yuba	31	30	1	-	0	1	-	1	1	0	2	6	-	3	17	-	
Not located	26	11	15	-	-	-	-	14	-	-	3	8	1	-	-	-	
STATE Total	3,825	3,335	490	-	58	969	-	270	227	146	231	239	11	140	1,907	-	

**Table 85: Summary Gross Power Generation Potentials (MWe) by Principal Resource Category, 2010**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversion	Biosolids Landfilled (not in Total)	Biosolids Diverted	MSW Biomass Landfilled	MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Orchard and Vine	Field and Seed	Food Processing	Food Forestry	Dedicated Crop		
Alameda	193	180	13	0	3	88	96	1	1	-	1	0	-	0	4	-	
Alpine	19	19	0	-	-	0	0	0	0	-	-	-	-	-	19	-	
Amador	43	41	2	-	-	3	3	2	2	-	1	0	-	0	35	-	
Butte	179	176	3	0	-	11	13	2	2	0	12	49	0	16	76	-	
Calaveras	69	67	3	-	-	3	3	2	2	-	0	0	-	0	61	-	
Colusa	118	114	4	-	-	1	1	2	2	-	6	73	2	17	15	-	
Contra Costa	136	118	18	1	2	63	60	2	2	0	1	4	2	0	2	-	
Del Norte	93	91	2	-	0	1	1	2	2	1	-	-	-	-	89	-	
El Dorado	147	145	2	0	0	10	11	1	1	-	1	-	-	0	124	-	
Fresno	466	353	112	-	3	50	56	73	57	20	81	53	30	17	103	-	
Glenn	92	84	8	-	0	1	1	7	7	3	8	45	-	11	18	-	
Humboldt	494	487	7	-	0	6	6	6	6	2	-	0	-	0	476	-	
Imperial	159	90	69	-	0	17	19	54	52	1	1	27	12	0	28	-	
Inyo	90	87	3	-	-	2	1	2	2	-	0	-	0	0	86	-	
Kern	355	300	55	-	2	52	58	48	46	29	45	59	1	22	68	-	
Kings	140	90	50	-	0	7	8	46	42	31	9	58	3	8	0	-	
Lake	81	80	1	-	0	3	3	1	1	-	3	0	0	0	71	-	
Lassen	145	140	5	0	-	1	2	4	4	-	-	0	-	-	137	-	
Los Angeles	1,453	1,345	108	5	29	672	707	1	1	0	0	0	0	0	44	-	
Madera	145	117	27	-	0	10	11	25	22	13	33	6	1	8	50	-	
Marin	42	35	8	-	1	15	14	4	4	2	0	0	0	-	9	-	
Mariposa	45	42	2	-	0	1	1	2	2	-	0	0	-	-	40	-	
Mendocino	484	481	2	-	0	4	5	2	2	0	4	-	0	1	467	-	
Merced	199	105	94	-	0	17	18	82	72	45	20	29	5	26	1	-	
Modoc	94	86	8	-	-	0	0	7	7	-	-	3	1	-	82	-	
Mono	38	37	1	-	-	2	3	1	1	-	-	0	-	-	33	-	
Monterey	140	102	38	0	1	24	26	6	6	0	9	3	29	3	40	-	
Napa	69	67	2	-	0	10	11	1	1	-	9	-	-	2	35	-	
Nevada	84	83	1	0	0	5	5	1	0	-	0	-	-	-	73	-	
Orange	503	437	66	1	8	254	236	0	0	-	0	-	0	0	5	-	
Placer	119	115	4	0	-	19	21	2	2	0	0	5	0	1	71	-	
Plumas	167	166	1	-	0	1	1	1	1	-	-	-	-	-	163	-	
Riverside	470	400	70	-	8	174	171	29	21	12	6	5	4	0	74	-	
Sacramento	226	200	26	-	2	95	97	7	7	3	7	15	1	1	0	-	
San Benito	30	23	7	-	0	3	4	4	4	0	1	0	3	1	14	-	
San Bernardino	509	443	66	0	5	147	147	35	32	19	1	1	0	0	173	-	
San Diego	564	516	48	0	9	231	238	6	2	1	6	0	1	-	73	-	
San Francisco	79	74	6	3	-	39	41	-	-	-	-	-	-	-	-	-	
San Joaquin	250	193	57	-	1	49	51	36	33	19	35	38	12	26	1	-	
San Luis Obispo	90	77	12	-	1	15	16	8	7	0	9	2	3	0	36	-	
San Mateo	100	94	6	1	0	39	42	0	0	-	0	0	0	-	18	-	
Santa Barbara	109	94	15	-	1	25	26	4	4	0	6	1	7	1	38	-	
Santa Clara	220	203	17	1	11	85	90	2	2	0	1	0	2	1	29	-	
Santa Cruz	66	63	3	1	-	12	13	0	0	0	1	-	2	0	38	-	
Shasta	287	282	5	0	0	10	11	4	4	-	0	2	0	0	259	-	
Sierra	52	51	1	-	-	0	0	1	1	-	-	-	-	-	51	-	
Siskiyou	402	396	6	-	0	2	2	6	6	0	-	7	0	-	386	-	
Solano	77	65	12	1	1	27	28	6	5	1	3	10	1	0	1	-	
Sonoma	198	184	14	1	0	27	30	11	9	5	13	0	0	2	115	-	
Stanislaus	207	136	71	-	2	34	38	64	58	33	25	14	3	23	4	-	
Sutter	83	80	3	-	0	4	5	1	1	0	8	52	1	12	-		
Tehama	117	110	7	-	0	3	3	6	6	1	5	1	0	3	94	-	
Trinity	312	311	0	-	-	0	0	0	0	-	0	-	-	-	310	-	
Tulare	375	231	144	-	1	26	29	141	137	87	44	45	0	6	82	-	
Tuolumne	100	96	4	-	0	3	3	4	1	-	-	-	-	0	90	-	
Ventura	155	141	14	1	2	58	62	1	1	-	5	1	5	0	21	-	
Yolo	82	72	10	0	0	12	13	2	2	0	5	32	6	5	6	-	
Yuba	66	62	4	-	0	4	5	3	3	1	4	16	-	5	28	-	
Other- not locate	496	395	101	-	-	-	-	87	-	-	5	26	15	-	-	364	-
STATE Total	12,325	10,876	1,449	17	97	2,478	2,567	855	693	329	434	686	153	221	4,470	364	-

**Table 86: Summary Technical Power Generation Potentials (MWe) by Principal Resource Category, 2010**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversion	Biosolids Landfilled (not in Total)	Biosolids Diverted	MSW Biomass Landfilled	MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Orchard and Vine	Field and Seed	Vegetable	Food Processing	Forestry	Dedicated Crop	
Alameda	49	43	6	-	3	44	-	0	0	-	0	0	-	0	1	-	
Alpine	6	6	0	-	-	0	-	0	0	-	-	-	-	5	-	-	
Amador	27	26	1	-	-	1	-	0	0	-	1	0	-	0	24	-	
Butte	126	125	1	-	-	6	-	0	0	-	0	0	-	13	50	-	
Calaveras	44	44	1	-	-	1	-	1	1	-	0	0	-	0	42	-	
Colusa	100	99	1	-	-	1	-	0	0	-	40	36	0	14	10	-	
Contra Costa	40	32	9	-	2	32	-	0	0	0	3	2	1	0	1	-	
Del Norte	28	27	1	-	0	1	-	1	1	0	-	-	-	-	27	-	
El Dorado	98	97	1	-	0	5	-	0	0	-	0	-	-	0	92	-	
Fresno	221	186	35	-	2	25	-	27	19	10	82	25	2	14	44	-	
Glenn	72	69	3	-	0	1	-	3	3	1	28	22	-	9	10	-	
Humboldt	227	225	2	-	0	3	-	2	2	1	-	-	-	0	222	-	
Imperial	66	50	17	-	0	9	-	13	13	1	10	9	2	0	22	-	
Inyo	23	22	1	-	-	1	-	0	0	-	0	0	0	0	21	-	
Kern	175	154	22	-	2	26	-	19	19	14	53	21	0	17	37	-	
Kings	87	66	21	-	0	4	-	20	18	15	31	25	0	7	0	-	
Lake	48	48	0	-	0	2	-	0	0	-	2	0	0	0	44	-	
Lassen	116	115	1	-	-	1	-	1	1	-	0	0	0	-	114	-	
Los Angeles	379	325	54	-	23	336	-	0	0	0	0	0	0	0	20	-	
Madera	82	70	11	-	0	5	-	10	9	6	25	2	0	7	33	-	
Marin	14	10	3	-	0	7	-	1	1	1	0	-	0	-	4	-	
Mariposa	28	28	1	-	0	0	-	1	1	-	0	0	-	-	27	-	
Mendocino	217	216	1	-	0	2	-	1	0	0	3	-	0	1	210	-	
Merced	96	57	39	-	0	8	-	35	29	23	23	9	0	21	0	-	
Modoc	75	73	2	-	-	0	-	2	2	-	1	1	0	-	71	-	
Mono	18	18	0	-	-	1	-	0	0	-	-	-	0	-	17	-	
Monterey	42	38	4	-	0	12	-	2	2	0	8	1	1	2	16	-	
Napa	36	35	1	-	0	5	-	0	0	-	7	-	-	2	22	-	
Nevada	55	54	0	-	0	2	-	0	0	-	0	-	-	-	52	-	
Orange	135	102	33	-	6	127	-	0	0	-	0	-	0	0	2	-	
Placer	58	57	2	-	-	10	-	0	0	0	3	2	0	1	43	-	
Plumas	114	113	0	-	0	1	-	0	0	-	-	-	-	-	113	-	
Riverside	151	120	31	-	6	87	-	12	8	6	7	2	1	0	36	-	
Sacramento	72	61	11	-	1	47	-	3	2	1	13	7	0	1	0	-	
San Benito	12	11	1	-	0	2	-	1	1	0	1	0	0	1	7	-	
San Bernardino	194	165	30	-	4	74	-	14	13	9	1	0	0	0	101	-	
San Diego	169	146	23	-	7	115	-	3	1	0	4	0	0	-	40	-	
San Francisco	19	16	3	-	-	19	-	-	-	-	-	-	-	-	-	-	
San Joaquin	121	101	20	-	1	25	-	15	13	10	42	17	1	21	0	-	
San Luis Obispo	39	36	3	-	0	7	-	2	2	0	7	1	0	0	20	-	
San Mateo	26	23	3	-	0	19	-	0	0	-	0	0	0	-	6	-	
Santa Barbara	34	31	3	-	1	12	-	1	1	0	5	0	0	1	14	-	
Santa Clara	65	58	8	-	9	43	-	0	0	0	0	0	0	0	0	12	-
Santa Cruz	23	22	1	-	-	6	-	0	0	0	1	-	0	0	17	-	
Shasta	160	158	2	-	0	5	-	1	1	-	1	1	0	0	151	-	
Sierra	33	33	0	-	-	0	-	0	0	-	-	-	-	-	33	-	
Siskiyou	192	190	2	-	0	1	-	1	1	0	3	3	0	-	184	-	
Solano	27	23	4	-	0	14	-	1	1	0	6	4	0	0	1	-	
Sonoma	86	80	6	-	0	13	-	4	3	3	9	0	0	1	57	-	
Stanislaus	87	59	28	-	2	17	-	25	23	16	20	2	0	18	2	-	
Sutter	69	68	1	-	0	2	-	0	0	0	31	25	0	10	-	-	
Tehama	67	65	2	-	0	2	-	2	2	0	4	1	0	2	56	-	
Trinity	125	125	0	-	-	0	-	0	0	-	0	-	-	-	125	-	
Tulare	175	116	59	-	1	13	-	57	56	43	48	17	0	5	34	-	
Tuolumne	64	62	2	-	0	1	-	1	0	-	-	-	-	0	61	-	
Ventura	42	37	5	-	2	29	-	0	0	-	4	0	0	0	6	-	
Yolo	45	43	2	-	0	6	-	1	1	0	17	13	0	4	4	-	
Yuba	47	46	1	-	0	2	-	1	1	0	11	8	-	4	21	-	
Other- not locate	368	352	16	-	-	-	-	15	-	-	14	10	1	-	328	-	
STATE Total	5,414	4,876	538	-	78	1,239	-	303	256	164	599	296	12	177	2,383	328	

**Table 87: Summary Gross Power Generation Potentials (MWe) by Principal Resource Category, 2017**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversion	Biosolids Landfilled (not in Total)	Biosolids Diverted	MSW Biomass Landfilled	MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Orchard and Vine	Field and Seed	Vegetable	Food Processing	Forestry	Dedicated Crop	
Alameda	241	227	13	1	4	108	121	1	1	-	1	0	-	0	5	-	
Alpine	23	23	0	-	-	0	0	0	0	-	-	-	-	-	23	-	
Amador	52	50	2	-	-	3	4	2	2	-	1	0	-	0	41	-	
Butte	232	228	4	0	-	15	17	2	2	0	16	67	0	22	91	-	
Calaveras	84	81	3	-	-	4	4	2	2	-	0	0	-	0	73	-	
Colusa	156	152	4	-	-	2	2	2	2	-	8	98	2	23	18	-	
Contra Costa	172	152	20	2	3	79	78	2	2	0	1	5	2	0	3	-	
Del Norte	111	109	2	-	0	1	2	2	2	1	-	-	-	-	106	-	
El Dorado	179	176	2	0	0	13	15	1	1	-	1	-	-	-	149	-	
Fresno	559	438	121	-	3	65	74	81	63	22	112	51	30	19	124	-	
Glenn	119	110	8	-	0	2	2	8	8	3	11	60	-	15	22	-	
Humboldt	593	586	7	-	0	7	8	6	6	2	-	0	-	0	571	-	
Imperial	185	109	76	-	1	22	25	60	57	1	1	29	13	0	34	-	
Inyo	108	105	3	-	-	2	1	2	2	-	0	-	0	0	103	-	
Kern	438	378	60	-	3	67	76	53	50	32	63	65	1	28	82	-	
Kings	157	101	56	-	0	9	11	51	47	34	12	60	3	9	0	-	
Lake	99	98	1	-	0	4	5	1	1	-	3	0	0	0	85	-	
Lassen	174	169	5	0	-	2	2	5	5	-	-	0	0	-	165	-	
Los Angeles	1,772	1,660	112	6	35	808	874	1	1	1	0	0	0	0	0	53	-
Madera	183	151	31	-	0	14	14	29	25	15	47	7	1	11	61	-	
Marin	49	42	8	-	1	17	17	4	4	2	0	0	0	-	11	-	
Mariposa	53	51	2	-	0	1	1	2	2	-	0	0	-	-	49	-	
Mendocino	582	579	3	-	0	5	6	2	2	0	6	-	0	2	561	-	
Merced	239	134	105	-	0	22	25	93	81	51	28	31	5	32	1	-	
Modoc	113	104	9	-	-	1	1	8	8	-	-	4	1	-	99	-	
Mono	46	45	1	-	-	3	3	1	1	-	-	-	0	-	39	-	
Monterey	167	127	40	0	1	30	33	7	6	0	12	3	31	3	48	-	
Napa	86	84	2	-	0	13	14	1	1	-	13	-	-	3	42	-	
Nevada	101	100	1	0	0	6	7	1	1	-	0	-	-	-	88	-	
Orange	615	546	69	1	9	304	295	0	0	-	0	-	0	0	6	-	
Placer	148	144	4	1	-	25	28	2	2	0	0	6	0	1	85	-	
Plumas	201	200	1	-	0	2	2	1	1	-	-	-	-	-	196	-	
Riverside	599	521	78	-	10	223	228	32	23	13	7	6	4	0	88	-	
Sacramento	278	251	27	-	2	116	122	8	7	3	10	18	1	1	0	-	
San Benito	38	30	9	-	0	5	5	5	5	0	2	0	4	1	16	-	
San Bernardino	629	557	71	0	6	184	190	38	34	20	1	1	0	0	208	-	
San Diego	698	647	50	0	11	283	301	6	3	1	6	0	1	-	88	-	
San Francisco	94	88	6	3	-	45	49	-	-	-	-	-	-	-	-	-	
San Joaquin	319	255	64	-	2	66	70	42	38	22	49	44	12	33	1	-	
San Luis Obispo	108	95	13	-	1	18	20	8	8	0	13	2	3	0	43	-	
San Mateo	119	114	6	2	0	46	51	0	0	-	0	0	0	-	22	-	
Santa Barbara	131	115	15	-	1	30	32	4	4	0	8	1	8	1	45	-	
Santa Clara	268	250	18	1	13	102	111	2	2	0	1	0	2	1	35	-	
Santa Cruz	79	76	3	1	-	14	16	0	0	0	1	-	2	0	46	-	
Shasta	347	342	6	0	0	13	15	4	4	-	0	3	0	0	311	-	
Sierra	62	61	1	-	-	0	0	1	1	-	-	-	-	-	61	-	
Siskiyou	482	476	6	-	0	2	3	6	6	0	-	7	0	-	463	-	
Solano	96	83	13	1	1	34	36	6	5	1	3	12	1	1	1	-	
Sonoma	242	227	15	1	0	34	38	11	9	5	18	0	0	2	139	-	
Stanislaus	262	181	81	-	3	46	52	72	66	37	34	16	4	30	5	-	
Sutter	111	108	3	-	0	6	6	2	1	0	10	70	1	17	-	-	
Tehama	141	133	7	-	0	4	4	7	7	1	7	1	0	4	113	-	
Trinity	374	374	1	-	-	1	1	0	0	-	0	-	-	-	372	-	
Tulare	453	288	165	-	2	35	39	161	156	99	58	51	0	7	99	-	
Tuolumne	119	115	4	-	0	3	4	4	1	-	-	-	-	-	109	-	
Ventura	192	177	15	1	3	72	79	1	1	-	6	1	5	0	25	-	
Yolo	104	94	10	0	1	16	17	3	2	0	7	41	6	6	7	-	
Yuba	85	80	5	-	0	6	7	4	4	1	5	22	-	7	34	-	
Other- not located	1,110	1,001	109	-	-	-	-	92	-	-	6	31	17	-	-	964	-
STATE Total	15,575	13,997	1,579	21	123	3,061	3,264	948	773	369	589	817	162	282	5,364	964	

**Table 88: Summary Technical Power Generation Potentials (MWe) by Principal Resource Category, 2017**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversion	Biosolids Landfilled (not in Total)	Biosolids Diverted	MSW Biomass Landfilled	MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Orchard and Vine	Field and Seed	Vegetable	Food Processing	Forestry	Dedicated Crop
Alameda	60	54	6	-	4	54	-	0	0	-	1	0	-	0	2	-
Alpine	7	7	0	-	-	0	-	0	0	-	-	-	-	7	-	
Amador	32	31	1	-	-	2	-	1	1	-	1	0	-	0	29	-
Butte	130	129	1	-	-	8	-	1	1	0	11	34	0	18	60	-
Calaveras	53	52	1	-	-	2	-	1	1	-	0	0	-	0	50	-
Colusa	86	85	1	-	-	1	-	0	0	-	6	48	0	19	11	-
Contra Costa	47	38	10	-	2	39	-	0	0	0	1	2	1	0	1	-
Del Norte	33	33	1	-	0	1	-	1	1	0	-	-	-	-	32	-
El Dorado	118	117	1	-	0	6	-	0	0	-	1	-	-	-	110	-
Fresno	238	200	38	-	3	33	-	30	21	11	78	24	3	16	52	-
Glenn	64	61	3	-	0	1	-	3	3	2	7	29	-	12	12	-
Humboldt	272	270	3	-	0	3	-	2	2	1	-	-	-	0	267	-
Imperial	67	49	18	-	0	11	-	15	15	1	1	11	2	0	27	-
Inyo	27	26	1	-	-	1	-	0	0	-	0	-	0	0	26	-
Kern	191	167	24	-	3	34	-	21	20	16	44	23	0	22	45	-
Kings	69	46	23	-	0	5	-	22	20	17	8	25	0	7	0	-
Lake	58	57	0	-	0	2	-	0	0	-	2	0	0	0	53	-
Lassen	138	137	1	-	-	1	-	1	1	-	-	0	0	-	136	-
Los Angeles	457	401	56	-	28	404	-	0	0	0	0	0	0	0	24	-
Madera	101	88	13	-	0	7	-	12	10	7	33	2	0	9	39	-
Marin	16	12	3	-	1	9	-	1	1	1	0	-	0	-	5	-
Mariposa	34	33	1	-	0	1	-	1	1	-	0	0	-	-	32	-
Mendocino	260	260	1	-	0	3	-	1	1	0	4	-	0	1	252	-
Merced	106	62	44	-	0	11	-	39	33	26	20	8	0	26	0	-
Modoc	89	87	2	-	-	0	-	2	2	-	-	2	0	-	85	-
Mono	22	21	0	-	-	2	-	0	0	-	-	-	0	-	20	-
Monterey	50	46	5	-	1	15	-	2	2	0	9	1	2	3	19	-
Napa	45	44	1	-	0	6	-	0	0	-	9	-	-	2	26	-
Nevada	66	65	0	-	0	3	-	0	0	-	0	-	-	-	63	-
Orange	162	127	34	-	8	152	-	0	0	-	0	-	-	0	2	-
Placer	69	67	2	-	-	13	-	0	0	0	0	3	0	1	51	-
Plumas	136	136	0	-	0	1	-	0	0	-	-	-	-	-	135	-
Riverside	185	150	35	-	8	112	-	13	9	7	5	3	1	0	43	-
Sacramento	79	67	12	-	2	58	-	3	3	1	7	8	0	1	0	-
San Benito	15	13	2	-	0	2	-	1	1	0	1	0	0	1	8	-
San Bernardino	235	203	32	-	5	92	-	15	14	10	1	0	0	0	122	-
San Diego	206	182	24	-	9	142	-	3	1	0	4	0	0	-	48	-
San Francisco	23	20	3	-	-	23	-	-	-	-	-	-	-	-	-	-
San Joaquin	133	110	23	-	1	33	-	17	15	11	35	19	1	26	0	-
San Luis Obispo	46	43	3	-	1	9	-	2	2	0	9	1	0	0	24	-
San Mateo	31	28	3	-	0	23	-	0	0	-	0	0	0	-	8	-
Santa Barbara	41	37	3	-	1	15	-	1	1	0	6	0	0	1	16	-
Santa Clara	78	71	8	-	11	51	-	0	0	0	1	0	0	1	14	-
Santa Cruz	28	27	1	-	-	7	-	0	0	0	1	-	0	0	20	-
Shasta	191	189	2	-	0	7	-	1	1	-	0	1	0	0	182	-
Sierra	39	39	0	-	-	0	-	0	0	-	-	-	-	-	39	-
Siskiyou	227	225	2	-	0	1	-	2	2	0	-	3	0	-	221	-
Solano	28	24	4	-	1	17	-	2	1	0	2	5	0	0	1	-
Sonoma	104	98	6	-	0	17	-	4	4	3	13	0	0	2	69	-
Stanislaus	107	76	31	-	2	23	-	29	26	19	24	3	0	24	2	-
Sutter	58	57	1	-	0	3	-	0	0	0	7	34	0	13	-	-
Tehama	80	78	2	-	0	2	-	2	2	0	5	1	0	3	68	-
Trinity	150	150	0	-	-	0	-	0	0	-	0	-	-	-	150	-
Tulare	191	123	67	-	2	17	-	65	64	49	41	19	0	6	41	-
Tuolumne	77	75	2	-	0	2	-	2	0	-	-	-	-	-	73	-
Ventura	51	46	5	-	3	36	-	0	0	-	4	0	0	0	7	-
Yolo	41	39	2	-	0	8	-	1	1	0	5	17	0	5	4	-
Yuba	50	48	1	-	0	3	-	1	1	0	4	11	-	6	25	-
Other- not located	902	884	17	-	-	-	-	16	-	-	4	12	1	-	868	-
STATE Total	6,700	6,112	587	-	99	1,531	-	337	286	184	413	354	13	226	2,860	868

**Table 89: Summary Gross Power Generation Potentials (MWe) by Principal Resource Category, 2020**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversion	Biosolids Landfilled (not in Total)	Biosolids Diverted	MSW Biomass Landfilled	MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Orchard and Vine	Field and Seed	Vegetable	Food Processing	Forestry	Dedicated Crop
Alameda	245	232	14	1	4	111	124	1	1	-	1	0	-	0	5	-
Alpine	23	23	0	-	-	0	0	0	0	-	-	-	-	-	23	-
Amador	53	50	2	-	-	4	4	2	2	-	1	0	-	0	41	-
Butte	240	236	4	0	-	16	18	2	2	0	17	71	0	23	91	-
Calaveras	84	81	3	-	-	4	4	2	2	-	0	0	-	0	73	-
Colusa	164	159	5	-	-	2	2	2	2	-	8	104	2	25	18	-
Contra Costa	179	158	21	2	3	82	81	2	2	0	1	5	2	0	3	-
Del Norte	111	109	2	-	0	1	2	2	2	1	-	-	-	-	106	-
El Dorado	180	178	2	0	0	13	15	1	1	-	1	-	-	-	149	-
Fresno	577	450	127	-	4	70	79	86	67	23	119	46	31	19	124	-
Glenn	124	115	9	-	0	2	2	9	9	4	11	62	-	16	22	-
Humboldt	593	586	7	-	0	7	8	6	6	2	-	0	-	0	571	-
Imperial	194	112	81	-	1	24	27	64	62	1	1	29	14	0	34	-
Inyo	108	105	3	-	-	2	1	2	2	-	0	-	0	0	103	-
Kern	456	391	65	-	3	72	82	56	54	34	67	63	1	29	82	-
Kings	160	100	59	-	0	10	11	55	50	37	13	57	3	9	0	-
Lake	99	98	1	-	0	4	5	1	1	-	3	0	-	0	85	-
Lassen	174	169	5	0	-	2	2	5	5	-	-	0	0	-	165	-
Los Angeles	1,805	1,691	114	6	36	824	891	1	1	1	0	0	0	0	53	-
Madera	191	157	34	-	0	15	16	31	27	16	50	7	1	11	61	-
Marin	49	42	8	-	1	17	17	4	4	2	0	0	0	-	11	-
Mariposa	54	51	2	-	0	1	1	2	2	-	0	0	-	-	49	-
Mendocino	582	580	3	-	0	6	6	2	2	0	6	-	0	2	561	-
Merced	251	139	113	-	1	24	27	101	87	55	30	30	5	33	1	-
Modoc	113	104	9	-	-	1	1	9	8	-	-	4	1	-	99	-
Mono	47	46	1	-	-	3	4	1	1	-	-	-	0	-	39	-
Monterey	170	129	41	0	1	30	34	7	7	0	13	3	31	3	48	-
Napa	88	86	2	-	0	13	15	1	1	-	14	-	-	3	42	-
Nevada	102	100	1	0	0	6	7	1	1	-	0	-	-	-	88	-
Orange	633	562	71	1	10	313	304	0	0	-	0	-	0	0	6	-
Placer	152	148	5	1	-	27	30	2	2	0	0	7	0	2	85	-
Plumas	201	200	1	-	0	2	2	1	1	-	-	-	-	-	196	-
Riverside	641	557	84	-	11	243	247	35	25	15	7	6	4	0	88	-
Sacramento	287	259	28	-	2	120	127	8	7	3	10	17	1	1	0	-
San Benito	40	30	10	-	1	5	6	5	5	0	2	0	4	1	16	-
San Bernardino	652	577	75	0	7	195	201	40	36	21	1	1	0	0	208	-
San Diego	717	665	52	0	12	293	311	6	3	1	6	0	1	-	88	-
San Francisco	95	89	6	3	-	46	50	-	-	-	-	-	-	-	-	-
San Joaquin	338	269	69	-	2	72	76	45	41	24	53	43	12	33	1	-
San Luis Obispo	110	97	13	-	1	18	21	8	8	0	13	2	4	0	43	-
San Mateo	120	114	6	2	0	46	51	0	0	-	0	0	0	-	22	-
Santa Barbara	132	117	16	-	1	30	33	4	4	0	9	1	8	1	45	-
Santa Clara	273	255	18	1	14	105	113	2	2	0	1	0	2	1	35	-
Santa Cruz	80	77	3	1	-	15	17	0	0	0	1	-	2	0	46	-
Shasta	349	343	6	0	0	14	16	4	4	-	0	3	0	0	311	-
Sierra	62	61	1	-	-	0	0	1	1	-	-	-	-	-	61	-
Siskiyou	482	476	7	-	0	2	3	6	6	0	-	7	0	-	463	-
Solano	99	86	14	1	1	36	38	6	5	1	4	12	1	1	1	-
Sonoma	246	230	16	1	0	35	39	12	10	6	19	0	0	2	139	-
Stanislaus	278	191	86	-	3	49	55	77	70	40	36	16	4	31	5	-
Sutter	117	114	4	-	0	6	7	2	2	0	10	73	1	17	-	-
Tehama	142	134	8	-	0	4	5	7	7	1	7	1	0	4	113	-
Trinity	374	374	1	-	-	1	1	0	0	-	0	-	-	-	372	-
Tulare	473	296	178	-	2	37	42	174	169	107	61	50	0	7	99	-
Tuolumne	120	115	4	-	0	3	4	4	1	-	-	-	-	-	109	-
Ventura	197	182	15	1	3	74	82	1	1	-	6	1	5	0	25	-
Yolo	108	97	11	0	1	17	18	3	2	0	8	43	6	6	7	-
Yuba	88	83	5	-	0	7	7	4	4	1	5	23	-	8	34	-
Other- not locate	1,116	1,002	115	-	-	-	-	95	-	-	6	31	19	-	-	964
STATE Total	15,941	14,275	1,667	21	128	3,179	3,389	1,011	827	396	623	822	169	291	5,364	964

**Table 90: Summary Technical Power Generation Potentials (MWe) by Principal Resource Category, 2020**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversion	Biosolids Landfilled (not in Total)	Biosolids Diverted	MSW Biomass Landfilled	MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Orchard and Vine	Field and Seed	Vegetable	Food Processing	Forestry	Dedicated Crop
Alameda	61	55	6	-	4	55	-	0	0	-	1	0	-	0	2	-
Alpine	7	7	0	-	-	0	-	0	0	-	-	-	-	-	7	-
Amador	32	32	1	-	-	2	-	1	1	-	1	0	-	0	29	-
Butte	134	133	1	-	-	8	-	1	1	0	-	6	51	0	19	60
Calaveras	53	53	1	-	-	2	-	1	1	-	0	0	-	0	50	-
Colusa	90	89	1	-	-	1	-	1	0	-	6	51	0	20	11	-
Contra Costa	49	39	10	-	3	41	-	0	0	0	1	2	1	0	1	-
Del Norte	33	33	1	-	0	1	-	1	1	0	-	-	-	-	32	-
El Dorado	118	118	1	-	0	7	-	0	0	-	1	-	-	-	110	-
Fresno	245	204	41	-	3	35	-	32	23	12	83	22	3	15	52	-
Glenn	67	64	3	-	0	1	-	3	3	2	8	31	-	13	12	-
Humboldt	273	270	3	-	0	4	-	2	2	1	-	-	-	0	267	-
Imperial	65	45	20	-	1	12	-	16	16	1	1	6	2	0	27	-
Inyo	27	26	1	-	-	1	-	0	0	-	0	-	0	0	26	-
Kern	198	172	26	-	3	36	-	22	22	17	47	22	0	23	45	-
Kings	66	41	25	-	0	5	-	24	22	18	9	20	0	7	0	-
Lake	58	57	0	-	0	2	-	0	0	-	2	0	0	0	53	-
Lassen	139	137	1	-	-	1	-	1	1	-	-	0	0	-	136	-
Los Angeles	465	408	57	-	29	412	-	0	0	0	0	0	0	0	24	-
Madera	105	91	14	-	0	7	-	13	11	8	35	1	0	9	39	-
Marin	16	13	3	-	1	9	-	1	1	1	0	-	0	-	5	-
Mariposa	34	33	1	-	0	1	-	1	1	-	0	0	-	-	32	-
Mendocino	261	260	1	-	0	3	-	1	1	0	4	-	0	1	252	-
Merced	111	64	47	-	0	12	-	42	36	28	21	8	0	27	0	-
Modoc	89	87	2	-	-	0	-	2	2	-	-	2	0	-	85	-
Mono	22	22	0	-	-	2	-	0	0	-	-	-	0	-	20	-
Monterey	51	46	5	-	1	15	-	2	2	0	9	1	2	3	19	-
Napa	46	45	1	-	0	7	-	0	0	-	10	-	-	2	26	-
Nevada	66	66	0	-	0	3	-	0	0	-	0	-	-	-	63	-
Orange	166	131	35	-	8	156	-	0	0	-	0	-	0	0	2	-
Placer	70	68	2	-	-	13	-	1	1	0	0	3	0	1	51	-
Plumas	136	136	0	-	0	1	-	0	0	-	-	-	-	-	135	-
Riverside	196	159	38	-	9	121	-	14	10	7	5	2	1	0	43	-
Sacramento	81	69	12	-	2	60	-	3	3	1	7	8	0	1	0	-
San Benito	15	13	2	-	0	3	-	1	1	0	1	0	0	1	8	-
San Bernardino	242	208	34	-	5	97	-	16	14	11	1	0	0	0	122	-
San Diego	211	185	25	-	9	146	-	3	1	0	4	0	0	-	48	-
San Francisco	23	20	3	-	-	23	-	-	-	-	-	-	-	-	-	-
San Joaquin	139	114	25	-	2	36	-	18	16	12	37	18	1	27	0	-
San Luis Obispo	46	43	3	-	1	9	-	2	2	0	9	1	0	0	24	-
San Mateo	31	28	3	-	0	23	-	0	0	-	0	0	0	-	8	-
Santa Barbara	41	38	3	-	1	15	-	1	1	0	6	0	0	1	16	-
Santa Clara	80	72	8	-	11	52	-	0	0	0	1	0	0	1	14	-
Santa Cruz	28	27	1	-	-	7	-	0	0	0	1	-	0	0	20	-
Shasta	192	190	2	-	0	7	-	1	1	-	0	1	0	0	182	-
Sierra	39	39	0	-	-	0	-	0	0	-	-	-	-	-	39	-
Siskiyou	227	225	2	-	0	1	-	2	2	0	-	3	0	-	221	-
Solano	29	24	5	-	1	18	-	2	2	0	3	5	0	0	1	-
Sonoma	106	99	7	-	0	17	-	5	4	3	13	0	0	2	69	-
Stanislaus	113	79	34	-	3	24	-	31	27	20	25	2	0	25	2	-
Sutter	61	60	1	-	0	3	-	0	0	0	7	36	0	14	-	-
Tehama	81	78	2	-	0	2	-	2	2	0	5	1	0	3	68	-
Trinity	150	150	0	-	-	0	-	0	0	-	0	-	-	-	150	-
Tulare	199	126	73	-	2	19	-	71	69	53	43	18	0	6	41	-
Tuolumne	77	75	2	-	0	2	-	2	0	-	-	-	-	-	73	-
Ventura	52	47	5	-	3	37	-	0	0	-	4	0	0	0	7	-
Yolo	41	38	2	-	0	8	-	1	1	0	5	16	0	5	4	-
Yuba	51	49	2	-	0	3	-	1	1	0	4	11	-	6	25	-
Other- not locate	901	883	18	-	-	-	-	17	-	-	4	11	1	-	868	-
STATE Total	6,803	6,183	620	-	102	1,590	-	361	306	198	436	340	14	233	2,860	868

**Table 91: Summary Gross Energy Generation Potentials (MWh) by principal Resource Category, 2007**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversion	Biosolids Landfilled (not in Total)	Biosolids Diverted	MSW Biomass Landfilled	MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Orchard and Vine	Field and Seed	Vegetable	Food Processing	Forestry	Dedicated Crop
Alameda	1,149,000	1,057,000	91,900	2,800	20,300	530,120	562,700	10,110	10,110	-	2,970	240	-	140	22,500	-
Alpine	116,000	115,000	1,500	-	-	720	900	1,410	1,410	-	-	-	-	-	113,000	-
Amador	255,000	240,000	14,900	-	-	15,000	16,400	12,770	12,770	-	4,900	80	-	220	205,900	-
Butte	1,039,000	1,017,000	22,500	1,600	-	65,960	71,000	13,070	12,290	500	68,430	276,760	-	90,200	453,800	-
Calaveras	413,000	395,000	18,100	-	-	17,110	16,400	14,450	14,180	-	1,470	80	-	880	363,100	-
Colusa	676,000	647,000	29,500	-	-	7,620	7,800	11,680	10,960	-	32,430	411,950	16,270	96,920	91,700	-
Contra Costa	798,000	669,000	129,600	6,800	13,500	378,010	339,300	10,830	10,830	170	4,330	26,260	11,120	880	13,900	-
Del Norte	552,000	540,000	12,000	-	300	6,350	6,900	11,110	11,110	4,370	-	-	-	-	527,500	-
El Dorado	869,000	856,000	13,700	200	1,700	56,710	61,500	5,710	5,440	-	4,080	-	-	30	739,700	-
Fresno	2,831,000	2,057,000	774,100	-	13,800	276,220	297,800	488,210	383,530	132,780	453,170	355,770	219,860	111,530	614,500	-
Glenn	536,000	485,000	51,100	-	400	7,380	7,800	49,960	49,070	20,150	44,740	255,920	-	60,730	108,800	-
Humboldt	2,952,000	2,902,000	49,200	-	900	34,360	37,200	44,310	43,950	17,220	-	820	-	40	2,833,900	-
Imperial	964,000	520,000	443,400	-	2,300	91,980	95,200	345,450	330,760	6,640	4,010	171,940	81,480	1,650	169,500	-
Inyo	539,000	521,000	18,300	-	-	10,730	6,100	10,990	10,990	-	30	-	-	1,690	509,600	-
Kern	2,062,000	1,704,000	357,600	-	12,300	276,850	298,700	309,510	295,930	187,370	248,890	371,850	9,210	126,820	407,900	-
Kings	881,000	554,000	326,600	-	1,700	38,780	41,600	301,190	275,230	201,270	49,640	374,200	19,960	51,400	2,300	-
Lake	484,000	477,000	6,800	-	400	17,860	19,000	4,280	4,110	-	15,000	1,710	-	1,900	423,500	-
Lassen	867,000	835,000	31,400	200	-	7,940	8,700	30,260	29,810	-	-	2,400	-	-	817,300	-
Los Angeles	8,530,000	7,753,000	777,800	28,600	165,400	4,020,540	4,074,800	4,140	3,620	3,540	730	1,310	130	390	262,900	-
Madera	850,000	672,000	177,900	-	800	54,690	54,500	161,680	141,360	82,440	186,200	39,330	5,040	47,350	300,400	-
Marin	260,000	205,000	55,300	-	3,000	92,790	82,200	28,180	27,010	13,950	140	1,330	-	-	52,300	-
Mariposa	267,000	251,000	15,600	-	200	5,200	5,200	14,830	14,830	-	290	540	-	-	240,700	-
Mendocino	2,883,000	2,865,000	17,200	-	1,000	25,820	27,700	13,570	12,410	1,720	24,020	-	-	7,450	2,783,000	-
Merced	1,217,000	603,000	613,600	-	1,800	91,870	96,100	540,750	469,510	297,110	112,150	180,540	29,930	159,510	4,200	-
Modoc	563,000	515,000	48,200	-	-	2,200	2,600	47,000	46,280	-	-	19,440	870	-	490,700	-
Mono	226,000	220,000	6,500	-	-	13,160	13,900	4,110	4,110	-	-	-	90	-	194,900	-
Monterey	850,000	600,000	250,300	1,200	3,300	141,000	152,400	44,420	44,080	1,720	48,870	20,700	186,090	17,330	235,900	-
Napa	399,000	385,000	14,500	-	1,700	57,110	59,700	5,030	4,760	-	52,780	-	-	14,110	208,700	-
Nevada	498,000	491,000	7,500	1,500	1,000	26,930	29,400	3,650	3,380	-	450	-	-	-	436,700	-
Orange	2,923,000	2,460,000	463,100	4,800	42,700	1,519,020	1,328,000	680	680	-	60	-	1,500	1,190	30,200	-
Placer	685,000	659,000	26,100	2,500	-	105,320	113,400	11,150	10,440	830	2,110	25,530	30	6,050	421,200	-
Plumas	999,000	989,000	9,800	-	200	7,780	8,700	8,700	8,700	-	-	-	-	-	973,800	-
Riverside	2,529,000	2,090,000	439,200	-	38,900	919,560	857,900	180,700	129,360	75,800	34,260	34,330	22,930	2,650	438,200	-
Sacramento	1,310,000	1,130,000	179,700	-	9,900	554,700	544,500	51,940	47,860	19,160	43,140	92,460	6,960	5,020	900	-
San Benito	176,000	132,000	43,700	-	1,800	18,620	19,900	26,580	25,960	830	8,180	2,530	14,460	3,730	80,300	-
San Bernardino	2,914,000	2,474,000	440,400	800	26,300	826,290	783,400	234,310	211,660	124,910	3,670	5,110	2,370	1,590	1,030,900	-
San Diego	3,281,000	2,945,000	335,400	500	50,400	1,361,740	1,347,000	41,770	16,800	4,980	35,620	2,720	5,130	-	436,400	-
San Francisco	467,000	424,000	42,500	16,500	-	230,660	236,300	-	-	-	-	-	-	-	-	-
San Joaquin	1,452,000	1,075,000	377,200	-	6,800	270,590	266,600	238,130	214,750	126,130	198,840	233,230	80,960	152,250	4,400	-
San Luis Obispo	538,000	454,000	83,600	-	3,500	86,360	93,500	54,540	51,650	170	52,060	14,170	16,970	920	215,800	-
San Mateo	592,000	551,000	41,400	8,100	1,300	234,410	245,000	1,980	1,980	-	170	670	440	-	108,500	-
Santa Barbara	648,000	550,000	97,300	-	5,700	147,030	149,800	26,680	25,610	1,770	36,660	7,800	43,120	5,810	225,100	-
Santa Clara	1,281,000	1,163,000	118,300	3,100	61,900	502,620	510,800	13,150	12,970	170	3,180	1,030	9,670	3,480	175,200	-
Santa Cruz	388,000	369,000	19,200	3,600	-	69,760	75,300	1,390	1,390	170	4,950	-	7,820	70	228,600	-
Shasta	1,706,000	1,672,000	34,100	1,400	1,800	59,080	64,100	25,830	25,560	-	600	11,320	-	540	1,542,900	-
Sierra	308,000	303,000	4,900	-	-	1,170	900	4,680	4,680	-	-	-	-	-	301,100	-
Siskiyou	2,405,000	2,362,000	43,000	-	200	11,510	12,100	40,440	40,080	1,720	-	40,210	950	-	2,299,600	-
Solano	455,000	370,000	85,900	4,700	3,400	161,510	158,400	40,820	34,250	4,870	14,840	60,050	9,230	2,330	4,800	-
Sonoma	1,182,000	1,080,000	102,000	3,500	1,900	159,980	169,700	76,240	63,690	36,770	73,470	2,480	-	10,500	687,900	-
Stanislaus	1,234,000	758,000	476,800	-	11,900	189,540	204,300	427,250	389,830	220,700	139,190	82,030	21,880	132,200	26,200	-
Sutter	473,000	452,000	20,600	-	1,200	22,080	23,400	9,040	7,780	610	46,160	293,990	8,260	68,920	-	-
Tehama	696,000	651,000	45,500	-	500	17,130	18,200	43,070	42,090	5,700	31,170	7,640	-	15,790	562,500	-
Trinity	1,857,000	1,854,000	3,100	-	-	2,660	2,600	2,730	2,730	-	140	-	-	-	1,848,500	-
Tulare	2,282,000	1,335,000	947,600	-	7,400	139,410	150,600	925,880	899,890	568,090	252,010	278,080	2,130	36,710	490,100	-
Tuolumne	597,000	569,000	28,300	-	600	15,370	16,400	26,090	9,580	-	-	-	-	30	539,000	-
Ventura	898,000	804,000	94,400	3,100	14,000	338,900	349,700	5,440	5,440	-	32,580	3,610	28,780	2,140	122,900	-
Yolo	474,000	411,000	63,100	200	2,400	69,370	71,000	15,940	13,970	2,770	30,890	187,800	34,190	26,100	36,200	-
Yuba	381,000	356,000	24,800	-	900	22,080	23,400	21,500	21,500	3,650	24,600	90,200	-	30,760	167,400	-
Other- not located	880,000	182,000	697,700	-	-	-	-	606,630	-	-	29,630	152,690	91,040	-	-	-
STATE Total	70,500,000	60,775,000	9,765,000	95,700	541,400	14,400,000	14,340,000	5,700,000	4,610,000	2,171,000	2,500,000	4,100,000	990,000	1,300,000	26,600,000	-

**Table 92: Summary Technical Energy Generation Potentials (MWh) by Principal Resource Category, 2007**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversion	Biosolids Landfilled (not in Total)	Biosolids Diverted	MSW Biomass Landfilled	MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Orchard and Vine	Field and Seed	Vegetable	Food Processing	Forestry	Dedicated Crop
Alameda	294,000	250,995	43,405	-	16,240	265,060	-	2,500	2,500	-	2,080	120	-	100	8,300	-
Alpine	33,000	32,915	445	-	-	360	-	400	400	-	-	-	-	-	32,600	-
Amador	158,000	153,910	4,160	-	-	7,500	-	3,100	3,100	-	3,430	40	-	200	143,800	-
Butte	591,000	583,070	8,200	-	-	32,980	-	3,500	3,300	300	47,900	138,390	-	72,100	296,400	-
Calaveras	264,000	258,785	5,340	-	-	8,555	-	3,500	3,500	-	1,030	40	-	700	250,300	-
Colusa	366,000	361,705	4,295	-	-	3,810	-	2,700	2,700	-	22,700	201,580	810	77,600	56,800	-
Contra Costa	229,000	167,860	61,565	-	10,800	189,005	-	2,800	2,800	100	3,030	13,140	4,950	700	5,000	-
Del Norte	166,000	161,565	4,350	-	240	3,175	-	3,900	3,900	2,200	-	-	-	-	158,600	-
El Dorado	583,000	577,165	5,410	-	1,360	28,355	-	1,400	1,400	-	2,860	-	-	-	548,600	-
Fresno	1,180,000	941,480	238,610	-	11,040	138,110	-	179,600	129,100	66,400	317,220	166,630	17,790	89,200	260,500	-
Glenn	287,000	268,870	18,090	-	320	3,690	-	17,500	17,400	10,100	31,320	125,830	-	48,500	59,800	-
Humboldt	1,357,000	1,338,875	17,725	-	720	17,180	-	15,300	15,300	8,600	-	-	-	-	1,323,400	-
Imperial	340,000	233,975	106,445	-	1,840	45,990	-	85,100	84,400	3,300	2,810	56,760	13,120	1,300	133,500	-
Inyo	138,000	130,580	7,005	-	-	5,365	-	2,800	2,800	-	20	-	-	1,400	128,000	-
Kern	904,000	762,625	141,620	-	9,840	138,425	-	121,700	120,800	93,700	174,220	135,300	460	101,500	222,800	-
Kings	392,000	256,330	135,820	-	1,360	19,390	-	132,100	119,100	100,600	34,750	161,550	1,000	41,100	900	-
Lake	285,000	282,550	2,360	-	320	8,930	-	1,100	1,000	-	10,500	860	-	1,500	261,700	-
Lassen	689,000	680,715	7,955	-	-	3,970	-	7,400	7,400	-	-	1,100	-	-	676,200	-
Los Angeles	2,265,000	1,876,070	388,700	-	132,320	2,010,270	-	1,800	1,800	1,800	510	660	10	300	118,900	-
Madera	468,000	396,705	71,360	-	640	27,345	-	65,500	55,900	41,200	130,340	11,490	250	37,900	194,600	-
Marin	85,000	61,430	23,965	-	2,400	46,395	-	10,400	10,300	7,000	100	-	-	-	26,100	-
Mariposa	168,000	164,065	4,065	-	160	2,600	-	3,700	3,700	-	200	270	-	-	161,200	-
Mendocino	1,290,000	1,284,800	5,420	-	800	12,910	-	3,600	3,500	900	16,810	-	-	6,000	1,250,100	-
Merced	541,000	282,640	257,945	-	1,440	45,935	-	226,800	191,700	148,600	78,500	56,310	1,500	127,600	2,500	-
Modoc	442,000	429,975	11,785	-	-	1,100	-	11,600	11,600	-	-	7,420	40	-	421,600	-
Mono	107,000	105,235	2,145	-	-	6,580	-	1,000	1,000	-	-	-	-	-	99,800	-
Monterey	246,000	215,410	30,690	-	2,640	70,500	-	11,500	11,500	900	34,210	9,650	9,300	13,900	94,400	-
Napa	210,000	203,710	5,955	-	1,360	28,555	-	1,200	1,200	-	36,950	-	-	11,300	130,300	-
Nevada	326,000	323,580	2,705	-	800	13,465	-	800	800	-	320	-	-	-	310,900	-
Orange	805,000	573,830	230,770	-	34,160	759,510	-	200	200	-	40	-	90	1,000	9,600	-
Placer	329,000	318,280	10,340	-	-	52,660	-	2,900	2,800	400	1,490	12,770	-	4,800	254,000	-
Plumas	678,000	675,005	2,645	-	160	3,890	-	2,100	2,100	-	-	-	-	-	671,500	-
Riverside	826,000	629,665	196,545	-	31,120	459,780	-	74,700	51,300	37,900	23,980	15,480	4,050	2,100	215,000	-
Sacramento	384,000	304,555	79,325	-	7,920	277,350	-	18,600	16,800	9,600	30,200	44,660	350	4,100	700	-
San Benito	70,000	61,035	8,835	-	1,440	9,310	-	6,800	6,700	400	5,730	1,170	720	3,000	41,700	-
San Bernardino	1,139,000	941,670	197,565	-	21,040	413,145	-	95,100	84,200	62,500	2,570	1,850	230	1,300	604,000	-
San Diego	1,004,000	841,145	162,725	-	40,320	680,870	-	17,900	5,500	2,500	24,930	1,090	560	-	238,200	-
San Francisco	115,000	94,080	21,250	-	-	115,330	-	-	-	-	-	-	-	-	-	-
San Joaquin	611,000	478,805	131,810	-	5,440	135,295	-	96,000	85,200	63,100	139,180	103,810	6,790	121,700	2,400	-
San Luis Obispo	225,000	204,860	20,500	-	2,800	43,180	-	13,600	13,000	100	36,440	7,090	850	800	120,600	-
San Mateo	157,000	136,695	20,030	-	1,040	117,205	-	500	500	-	120	340	20	-	37,500	-
Santa Barbara	201,000	178,165	22,890	-	4,560	73,515	-	7,000	6,900	900	25,660	2,670	2,150	4,600	80,900	-
Santa Clara	383,000	329,800	53,230	-	49,520	251,310	-	3,300	3,300	100	2,230	400	2,170	2,800	71,300	-
Santa Cruz	139,000	132,745	5,795	-	-	34,880	-	400	400	100	3,470	-	390	100	99,300	-
Shasta	945,000	934,520	10,540	-	1,440	29,540	-	6,400	6,400	-	420	5,660	-	400	901,200	-
Sierra	196,000	194,790	1,295	-	-	585	-	1,200	1,200	-	-	-	-	-	194,300	-
Siskiyou	1,130,000	1,118,205	11,360	-	160	5,755	-	10,500	10,500	900	-	17,300	50	-	1,095,800	-
Solano	135,000	106,785	28,390	-	2,720	80,755	-	10,000	9,700	2,400	10,390	26,050	460	1,800	3,000	-
Sonoma	512,000	468,635	43,195	-	1,520	79,990	-	30,100	25,100	18,400	51,430	290	-	8,300	340,200	-
Stanislaus	506,000	319,405	186,415	-	9,520	94,770	-	171,100	152,600	110,400	97,440	14,480	1,110	105,800	11,600	-
Sutter	247,000	242,265	4,245	-	960	11,040	-	2,200	2,100	300	32,320	144,370	420	55,200	-	-
Tehama	395,000	381,335	13,310	-	400	8,565	-	12,100	12,000	2,900	21,820	3,460	-	12,600	335,700	-
Trinity	747,000	745,730	900	-	-	1,330	-	700	700	-	100	-	-	-	744,500	-
Tulare	965,000	578,335	387,090	-	5,920	69,705	-	376,900	367,000	284,000	176,420	105,570	410	29,400	201,100	-
Tuolumne	383,000	371,495	11,770	-	480	7,685	-	10,700	2,400	-	-	-	-	-	364,400	-
Ventura	244,000	210,270	33,530	-	11,200	169,450	-	1,400	1,400	-	22,810	1,810	2,030	1,700	33,400	-
Yolo	184,000	171,420	12,615	-	1,920	34,685	-	4,400	4,200	1,400	21,640	77,080	1,710	20,800	21,800	-
Yuba	230,000	221,675	7,925	-	720	11,040	-	6,300	6,300	1,800	17,230	45,110	-	24,700	124,500	-
Other- not located	193,000	81,280	111,700	-	-	-	-	105,100	-	-	20,770	60,510	6,600	-	-	-
STATE Total	28,500,000	24,834,000	3,646,000	-	433,000	7,217,630	-	2,010,000	1,690,000	1,086,000	1,720,000	1,780,000	80,000	1,040,000	14,200,000	-

**Table 93: Summary Gross Energy Generation Potentials (MWh) by Principal Resource Category, 2010**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversions	Biosolids Landfilled (not in Total)	Biosolids Diverted	MSW Biomass Landfilled	MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Orchard and Vine	Field and Seed	Vegetable	Food Processing	Forestry	Dedicated Crop	
Alameda	1,436,000	1,342,000	93,600	3,600	25,800	653,000	714,400	10,300	10,000	-	4,000	-	-	-	200	28,000	
Alpine	145,000	143,000	1,600	-	-	1,000	1,200	1,500	2,000	-	-	-	-	-	-	141,000	
Amador	318,000	303,000	15,900	-	-	19,000	22,000	13,600	14,000	-	6,500	-	-	300	257,000	-	
Butte	1,337,000	1,312,000	24,500	2,100	-	86,000	94,900	14,200	13,000	600	89,100	366,000	200	119,200	567,000	-	
Calaveras	516,000	497,000	19,200	-	-	22,000	21,800	15,300	15,000	-	1,900	-	-	1,100	454,000	-	
Colusa	879,000	848,000	31,400	-	-	10,000	11,000	13,200	12,000	-	42,900	542,000	16,500	127,900	115,000	-	
Contra Costa	1,016,000	878,000	137,600	8,900	17,800	471,000	447,900	11,500	12,000	200	5,600	32,000	12,300	1,100	17,000	-	
Del Norte	688,000	676,000	12,700	-	400	8,000	9,200	11,800	12,000	4,700	-	-	-	-	659,000	-	
El Dorado	1,098,000	1,083,000	15,000	200	2,300	75,000	83,900	6,200	6,000	-	5,200	-	-	-	925,000	-	
Fresno	3,469,000	2,632,000	836,800	-	19,200	374,000	414,300	543,300	427,000	147,800	601,200	397,000	223,000	129,200	768,000	-	
Glenn	684,000	628,000	55,700	-	500	10,000	10,600	54,500	54,000	22,000	58,700	333,000	-	80,300	136,000	-	
Humboldt	3,680,000	3,629,000	50,200	-	1,200	43,000	47,500	45,200	45,000	17,600	-	1,000	-	-	3,542,000	-	
Imperial	1,186,000	674,000	512,700	-	3,400	130,000	139,700	405,400	388,000	7,800	5,100	201,000	87,900	1,800	212,000	-	
Inyo	670,000	652,000	19,100	-	-	12,000	7,800	11,400	11,000	-	-	-	300	1,700	637,000	-	
Kern	2,645,000	2,236,000	409,700	-	17,700	387,000	429,400	355,900	340,000	215,500	332,400	442,000	9,000	161,900	510,000	-	
Kings	1,045,000	672,000	373,100	-	2,400	53,000	58,900	341,500	312,000	228,200	65,400	434,000	25,500	61,300	3,000	-	
Lake	606,000	599,000	7,300	-	500	23,000	25,200	4,600	4,000	-	19,200	2,000	-	2,400	529,000	-	
Lassen	1,080,000	1,046,000	34,800	300	-	10,000	11,600	32,400	32,000	-	-	3,000	1,200	-	1,022,000	-	
Los Angeles	10,819,000	10,012,000	806,700	37,000	213,800	5,000,000	5,267,900	4,400	4,000	3,700	900	2,000	100	400	329,000	-	
Madera	1,080,000	875,000	204,900	-	1,100	76,000	78,600	186,400	163,000	95,000	248,600	47,000	5,500	61,000	376,000	-	
Marin	313,000	257,000	56,100	-	3,800	110,000	103,600	28,500	27,000	14,100	200	2,000	-	65,000	-	-	
Mariposa	332,000	315,000	16,400	-	200	7,000	6,800	15,600	16,000	-	400	1,000	-	-	301,000	-	
Mendocino	3,603,000	3,585,000	18,100	-	1,300	32,000	35,700	14,000	13,000	1,800	31,400	-	300	9,300	3,479,000	-	
Merced	1,481,000	783,000	698,200	-	2,500	126,000	136,200	613,500	533,000	337,100	149,400	213,000	39,600	195,800	5,000	-	
Modoc	702,000	644,000	57,600	-	-	3,000	3,600	51,700	51,000	-	-	24,000	5,500	-	614,000	-	
Mono	285,000	278,000	7,200	-	-	17,000	18,900	4,500	5,000	-	-	-	100	-	244,000	-	
Monterey	1,043,000	759,000	284,500	1,500	4,200	175,000	194,800	45,600	45,000	1,800	65,200	23,000	218,600	21,700	295,000	-	
Napa	511,000	496,000	15,600	-	2,300	74,000	80,200	5,400	5,000	-	70,600	-	-	17,600	261,000	-	
Nevada	624,000	616,000	7,700	1,900	1,300	34,000	38,000	3,800	4,000	-	600	-	-	-	546,000	-	
Orange	3,747,000	3,256,000	491,100	6,400	56,500	1,890,000	1,758,400	700	1,000	-	100	-	1,400	1,500	38,000	-	
Placer	887,000	858,000	29,400	3,500	-	144,000	159,700	12,500	12,000	900	2,700	34,000	-	8,000	526,000	-	
Plumas	1,247,000	1,237,000	10,000	-	200	10,000	11,000	8,900	9,000	-	-	-	-	-	1,217,000	-	
Riverside	3,501,000	2,977,000	523,300	-	57,600	1,294,000	1,271,600	214,300	153,000	89,900	43,400	40,000	29,100	2,900	548,000	-	
Sacramento	1,681,000	1,488,000	192,400	-	13,100	705,000	723,000	55,100	51,000	20,300	55,500	113,000	8,800	6,600	1,000	-	
San Benito	226,000	172,000	53,700	-	2,500	25,000	27,900	29,800	29,000	900	10,600	3,000	21,000	4,700	101,000	-	
San Bernardino	3,793,000	3,301,000	492,200	1,100	36,700	1,097,000	1,093,100	261,400	236,000	139,400	4,700	6,000	3,300	1,600	1,289,000	-	
San Diego	4,198,000	3,843,000	354,700	700	66,400	1,717,000	1,772,600	44,000	18,000	5,300	42,500	3,000	6,200	-	546,000	-	
San Francisco	592,000	548,000	43,900	21,200	-	287,000	304,800	-	-	-	-	-	-	-	-	-	
San Joaquin	1,858,000	1,436,000	422,000	-	9,700	366,000	377,100	269,500	243,000	142,700	264,100	285,000	86,700	193,700	6,000	-	
San Luis Obispo	668,000	576,000	93,000	-	4,500	108,000	120,700	56,300	53,000	200	68,600	15,000	24,100	1,200	270,000	-	
San Mateo	746,000	702,000	43,600	10,300	1,700	290,000	313,500	2,100	2,000	-	200	1,000	1,500	-	136,000	-	
Santa Barbara	813,000	703,000	109,500	-	7,500	184,000	194,600	27,600	27,000	1,800	47,400	10,000	53,200	7,300	281,000	-	
Santa Clara	1,640,000	1,513,000	127,100	4,100	81,100	634,000	669,300	13,900	14,000	200	4,300	1,000	12,900	4,500	219,000	-	
Santa Cruz	489,000	466,000	23,400	4,600	-	87,000	97,000	1,400	1,000	200	5,800	-	11,600	100	286,000	-	
Shasta	2,140,000	2,101,000	38,200	1,900	2,400	77,000	85,500	27,600	27,000	-	800	15,000	1,800	700	1,929,000	-	
Sierra	383,000	378,000	4,900	-	-	1,000	1,100	4,800	5,000	-	-	-	-	-	376,000	-	
Siskiyou	2,997,000	2,952,000	45,000	-	200	15,000	15,500	41,500	41,000	1,800	-	49,000	1,800	-	2,874,000	-	
Solano	572,000	480,000	91,100	6,100	4,500	203,000	207,800	42,800	36,000	5,100	19,300	75,000	10,600	2,900	6,000	-	
Sonoma	1,476,000	1,370,000	106,000	4,500	2,400	201,000	220,000	79,000	66,000	38,100	97,400	3,000	200	12,900	860,000	-	
Stanislaus	1,544,000	1,014,000	529,800	-	16,400	255,000	282,900	473,200	432,000	244,500	184,400	102,000	26,000	170,800	33,000	-	
Sutter	620,000	597,000	22,700	-	1,700	31,000	33,500	10,400	9,000	700	58,200	386,000	8,500	90,700	-	-	
Tehama	868,000	818,000	49,300	-	700	23,000	24,600	46,600	46,000	6,100	40,000	9,000	-	20,600	703,000	-	
Trinity	2,322,000	2,318,000	3,400	-	-	4,000	3,600	3,000	3,000	-	200	-	-	-	2,311,000	-	
Tulare	2,791,000	1,717,000	1,074,500	-	10,400	192,000	213,500	1,050,100	1,021,000	644,200	328,000	337,000	2,100	45,300	613,000	-	
Tuolumne	741,000	713,000	28,800	-	800	19,000	21,000	26,600	10,000	-	-	-	-	-	674,000	-	
Ventura	1,152,000	1,048,000	104,100	4,100	18,400	431,000	461,500	5,800	6,000	-	39,600	4,000	34,500	2,800	154,000	-	
Yolo	614,000	539,000	74,200	300	3,300	92,000	97,500	17,500	15,000	3,000	40,600	241,000	42,300	34,300	45,000	-	-
Yuba	493,000	464,000	29,700	-	1,300	32,000	34,800	25,700	26,000	4,400	30,900	119,000	-	40,500	209,000	-	-
Other - not located	3,693,000	5,650,000	754,500	-	-	-	-	646,200	-	-	36,900	191,000	108,300	-	-	2,711,000	-
STATE Total	91,800,000	83,705,000	10,789,000	124,000	722,000	18,500,000	19,110,000	6,360,000	5,163,000	2,448,000	3,230,000	5,110,000	1,140,000	1,650,000	33,300,000	2,710,972	-

**Table 94: Summary Technical Energy Generation Potentials (MWh) by Principal Resource Category, 2010**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversion	Biosolids Landfilled (not in Total)	Biosolids Diverted	MSW Biomass Landfilled	MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Orchard and Vine	Field and Seed	Vegetable	Food Processing	Forestry	Dedicated Crop
Alameda	363,000	318,900	44,300	-	20,600	326,250	-	2,600	2,600	-	3,000	200	-	160	10,300	-
Alpine	42,000	41,100	500	-	-	400	-	400	400	-	-	-	-	-	40,700	-
Amador	198,000	193,400	4,700	-	-	9,700	-	3,500	3,500	-	4,700	100	-	240	179,800	-
Butte	941,000	932,400	8,800	-	-	42,800	-	3,700	3,500	300	245,500	183,200	10	95,360	370,600	-
Calaveras	330,000	324,300	5,700	-	-	10,850	-	3,700	3,700	-	1,500	100	-	880	312,900	-
Colusa	743,000	738,600	4,800	-	-	5,200	-	3,100	3,100	-	295,500	265,400	830	102,320	71,000	-
Contra Costa	301,000	235,400	65,200	-	14,200	235,250	-	3,000	3,000	100	19,900	16,000	5,260	880	6,100	-
Del Norte	207,000	202,000	4,700	-	300	4,050	-	4,200	4,200	2,400	-	-	-	-	198,100	-
El Dorado	730,000	724,100	5,900	-	1,800	37,550	-	1,500	1,500	-	3,500	-	-	-	685,600	-
Fresno	1,645,000	1,383,500	261,700	-	15,400	186,750	-	199,900	143,700	73,900	608,200	187,600	18,360	103,360	325,600	-
Glenn	533,000	513,100	19,600	-	400	4,850	-	19,000	18,900	11,000	205,200	164,200	-	64,240	74,800	-
Humboldt	1,692,000	1,674,200	18,200	-	1,000	21,250	-	15,700	15,700	8,800	-	-	-	-	1,654,400	-
Imperial	494,000	370,700	123,600	-	2,700	65,100	-	99,900	99,000	3,900	73,900	70,400	13,950	1,440	166,900	-
Inyo	170,000	163,400	7,100	-	-	6,200	-	2,900	2,900	-	-	-	20	1,360	160,000	-
Kern	1,306,000	1,143,400	162,900	-	14,200	193,450	-	140,000	139,000	107,800	391,500	158,700	470	129,520	278,400	-
Kings	647,000	492,500	154,100	-	1,900	26,700	-	149,800	135,100	114,100	231,200	185,500	1,280	49,040	1,200	-
Lake	358,000	355,100	2,700	-	400	11,500	-	1,300	1,200	-	14,600	1,100	-	1,920	326,900	-
Lassen	861,000	852,800	8,700	-	-	5,200	-	8,000	8,000	-	1,400	1,400	60	-	845,400	-
Los Angeles	2,824,000	2,421,200	403,300	-	171,000	2,500,050	-	2,100	1,900	1,900	1,500	800	10	320	148,700	-
Madera	608,000	525,400	82,400	-	900	37,850	-	75,600	64,500	47,500	187,500	13,500	280	48,800	243,300	-
Marin	101,000	77,000	24,200	-	3,000	55,050	-	10,500	10,400	7,100	100	-	10	-	32,500	-
Mariposa	210,000	205,800	4,300	-	200	3,350	-	3,900	3,900	-	600	400	-	-	201,600	-
Mendocino	1,613,000	1,607,100	5,800	-	1,000	16,150	-	3,900	3,700	900	21,900	-	20	7,440	1,562,500	-
Merced	717,000	426,900	290,100	-	2,000	63,000	-	257,400	217,600	168,600	168,700	64,200	1,990	156,640	3,100	-
Modoc	560,000	547,000	13,300	-	-	1,550	-	12,800	12,800	-	9,300	9,300	-	-	527,000	-
Mono	135,000	132,200	2,500	-	-	8,700	-	1,200	1,200	-	-	-	10	-	124,800	-
Monterey	317,000	283,500	33,100	-	3,400	87,650	-	12,000	11,800	900	56,400	10,800	10,980	17,360	118,000	-
Napa	266,000	259,900	6,400	-	1,800	37,050	-	1,300	1,300	-	49,400	-	-	14,080	162,700	-
Nevada	408,000	405,100	2,900	-	1,000	16,850	-	900	900	-	400	-	-	-	388,800	-
Orange	1,004,000	759,100	244,800	-	45,200	945,050	-	200	200	-	100	-	70	1,200	12,000	-
Placer	435,000	423,100	11,800	-	-	72,150	-	3,300	3,200	500	18,800	16,900	-	6,400	317,300	-
Plumas	847,000	843,700	2,900	-	200	4,850	-	2,300	2,300	-	-	-	-	-	839,200	-
Riverside	1,124,000	891,100	233,200	-	46,100	646,800	-	88,700	60,900	45,000	48,600	18,300	4,550	2,320	268,900	-
Sacramento	538,000	453,200	84,500	-	10,500	352,300	-	19,800	17,900	10,200	93,700	54,800	450	5,280	900	-
San Benito	90,000	79,500	10,100	-	2,000	12,650	-	7,600	7,500	500	8,900	1,500	1,080	3,760	52,100	-
San Bernardino	1,448,000	1,227,700	220,600	-	29,400	548,450	-	106,100	93,900	69,700	5,400	2,100	330	1,280	755,200	-
San Diego	1,261,000	1,089,300	171,800	-	53,100	858,450	-	18,900	5,800	2,700	31,000	1,100	660	-	297,900	-
San Francisco	143,000	121,400	22,000	-	-	143,350	-	-	-	-	-	-	-	-	-	-
San Joaquin	903,000	754,500	148,900	-	7,800	183,150	-	108,800	96,500	71,400	311,700	126,800	7,240	154,960	3,000	-
San Luis Obispo	288,000	266,700	21,600	-	3,600	54,200	-	14,100	13,400	100	55,800	7,700	1,220	960	150,700	-
San Mateo	195,000	174,100	20,700	-	1,400	144,900	-	600	600	-	600	400	90	-	46,800	-
Santa Barbara	255,000	230,400	24,200	-	6,000	92,000	-	7,200	7,100	900	36,500	3,300	2,670	5,840	101,100	-
Santa Clara	484,000	428,300	56,100	-	64,900	316,900	-	3,500	3,500	100	3,400	500	2,440	3,600	89,100	-
Santa Cruz	173,000	166,600	6,200	-	-	43,650	-	400	400	100	4,100	-	590	80	124,000	-
Shasta	1,190,000	1,178,300	11,400	-	1,900	38,300	-	6,900	6,900	-	8,000	7,500	90	560	1,126,400	-
Sierra	245,000	243,500	1,300	-	-	700	-	1,200	1,200	-	-	-	-	-	242,800	-
Siskiyou	1,430,000	1,418,200	11,800	-	200	7,250	-	10,800	10,800	900	20,900	20,900	100	-	1,369,800	-
Solano	201,000	170,900	30,300	-	3,600	101,250	-	10,800	10,300	2,600	46,200	32,700	540	2,320	3,700	-
Sonoma	638,000	593,200	45,000	-	1,900	100,500	-	31,300	26,100	19,100	68,500	400	10	10,320	425,200	-
Stanislaus	647,000	440,800	206,700	-	13,100	127,550	-	189,700	169,200	122,300	146,700	17,800	1,330	136,640	14,600	-
Sutter	513,000	508,000	4,900	-	1,400	15,450	-	2,600	2,500	400	230,600	189,900	430	72,560	-	-
Tehama	497,000	483,100	14,400	-	600	11,300	-	13,000	12,900	3,100	32,200	4,200	-	16,480	419,700	-
Trinity	933,000	932,300	1,000	-	-	1,750	-	800	800	-	100	-	-	-	930,600	-
Tulare	1,303,000	864,000	439,100	-	8,300	96,050	-	427,500	416,200	322,100	356,500	126,900	430	36,240	251,200	-
Tuolumne	476,000	464,500	12,000	-	600	9,550	-	10,900	2,500	-	-	-	-	-	455,400	-
Ventura	310,000	274,700	35,700	-	14,700	215,700	-	1,400	1,400	-	30,000	2,200	2,400	2,240	41,800	-
Yolo	337,000	323,200	14,100	-	2,600	45,900	-	4,800	4,600	1,500	127,800	99,400	2,120	27,440	27,300	-
Yuba	354,000	344,100	9,600	-	1,000	16,000	-	7,600	7,600	2,200	81,300	59,700	-	32,400	155,700	-
Other - not located	2,738,000	5,057,600	119,800	-	-	-	-	112,200	-	-	101,800	75,900	7,640	-	-	2,440,000
STATE Total	40,400,000	38,800,000	4,008,000	-	577,000	9,226,400	-	2,300,000	1,905,200	1,224,600	4,500,000	2,200,000	90,300	1,320,000	17,700,000	2,439,875

**Table 95: Summary Gross Energy Generation Potentials (MWh) by Principal Resource Category, 2017**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversion	Biosolids Landfilled (not in Total)	Biosolids Diverted	MSW Biomass Landfilled	MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Orchard and Vine	Field and Seed	Vegetable	Food Processing	Forestry	Dedicated Crop
Alameda	1,793,000	1,693,000	99,400	4,400	32,600	807,000	902,000	10,900	10,900	-	5,600	400	-	300	33,700	-
Alpine	173,000	171,000	1,700	-	-	1,000	1,000	1,600	1,600	-	-	-	-	-	169,500	-
Amador	387,000	370,000	17,500	-	-	25,000	29,000	15,000	15,000	-	9,100	100	-	300	308,800	-
Butte	1,725,000	1,697,000	27,800	2,800	-	115,000	130,000	16,000	15,000	600	118,200	501,600	200	163,000	680,800	-
Calaveras	623,000	602,000	21,400	-	-	28,000	29,000	17,000	16,600	-	2,600	100	-	1,500	544,800	-
Colusa	1,163,000	1,130,000	33,600	-	-	13,000	14,000	14,700	13,800	-	59,100	733,100	16,800	174,400	137,600	-
Contra Costa	1,281,000	1,132,000	149,700	11,500	23,200	586,000	580,000	12,400	12,400	200	7,400	36,100	13,800	1,400	21,000	-
Del Norte	828,000	814,000	14,000	-	600	11,000	12,000	13,000	13,000	5,100	-	-	-	-	791,300	-
El Dorado	1,331,000	1,314,000	16,400	200	3,000	96,000	109,000	6,800	6,400	-	6,600	-	-	-	1,109,400	-
Fresno	4,164,000	3,261,000	902,900	-	25,500	487,000	549,000	600,900	472,000	163,400	831,700	377,300	226,400	144,300	921,700	-
Glenn	885,000	822,000	63,000	-	700	13,000	14,000	61,600	60,500	24,900	79,200	443,300	-	110,100	163,300	-
Humboldt	4,413,000	4,361,000	52,100	-	1,500	52,000	60,000	46,900	46,500	18,200	-	1,200	-	100	4,251,000	-
Imperial	1,377,000	814,000	562,400	-	4,500	167,000	183,000	443,600	424,800	8,500	6,200	219,200	97,500	1,500	254,300	-
Inyo	802,000	783,000	20,000	-	-	14,000	10,000	11,900	11,900	-	-	300	-	1,700	764,400	-
Kern	3,262,000	2,812,000	449,300	-	23,400	501,000	566,000	391,000	373,800	236,600	467,700	483,700	8,600	208,700	611,700	-
Kings	1,169,000	755,000	414,300	-	3,300	70,000	79,000	381,500	348,500	254,800	89,400	448,500	25,800	67,900	3,400	-
Lake	736,000	727,000	7,800	-	700	30,000	34,000	5,000	4,800	-	24,900	2,600	-	3,100	635,300	-
Lassen	1,292,000	1,255,000	36,500	300	-	13,000	14,000	34,000	33,500	-	-	3,700	1,200	-	1,225,900	-
Los Angeles	13,194,000	12,359,000	834,900	45,700	264,200	6,018,000	6,509,000	4,400	3,900	3,800	1,200	2,000	100	400	394,400	-
Madera	1,360,000	1,127,000	233,500	-	1,500	101,000	108,000	213,000	186,200	108,600	348,800	51,700	5,600	79,900	450,600	-
Marin	366,000	310,000	56,400	-	4,700	127,000	125,000	28,600	27,400	14,100	300	2,000	200	-	78,500	-
Mariposa	397,000	379,000	17,800	-	200	8,000	9,000	17,000	17,000	-	500	800	-	-	361,200	-
Mendocino	4,330,000	4,311,000	19,200	-	1,600	40,000	45,000	14,800	13,500	1,900	42,000	-	300	11,200	4,174,600	-
Merced	1,777,000	995,000	782,400	-	3,500	167,000	186,000	695,200	603,700	382,000	208,800	228,900	39,500	241,300	6,400	-
Modoc	840,000	775,000	65,100	-	-	4,000	5,000	59,300	58,400	-	-	29,800	5,400	-	736,200	-
Mono	346,000	337,000	8,000	-	-	23,000	25,000	5,000	5,000	-	-	-	100	-	292,400	-
Monterey	1,245,000	946,000	299,000	1,900	5,400	220,000	249,000	48,500	48,100	1,900	91,100	22,400	228,700	26,000	353,800	-
Napa	640,000	624,000	17,100	-	3,000	94,000	104,000	5,900	5,600	-	99,000	-	-	21,300	313,200	-
Nevada	754,000	745,000	8,300	2,400	1,600	43,000	49,000	4,100	3,800	-	800	-	-	-	655,100	-
Orange	4,579,000	4,066,000	512,900	7,900	70,700	2,262,000	2,197,000	700	700	-	100	-	1,400	1,900	45,400	-
Placer	1,102,000	1,070,000	32,400	4,700	-	187,000	210,000	13,800	13,000	1,100	3,400	45,900	-	10,600	631,600	-
Plumas	1,496,000	1,486,000	10,300	-	200	12,000	14,000	9,200	9,200	-	-	-	-	-	1,460,700	-
Riverside	4,460,000	3,880,000	580,200	-	76,800	1,663,000	1,695,000	237,900	170,300	99,800	54,200	43,100	30,400	2,400	657,300	-
Sacramento	2,071,000	1,869,000	202,500	-	16,500	862,000	912,000	58,000	53,400	21,400	72,500	130,600	8,900	9,200	1,400	-
San Benito	286,000	220,000	66,100	-	3,600	36,000	40,000	35,400	34,500	1,100	13,900	3,500	27,100	5,900	120,600	-
San Bernardino	4,680,000	4,149,000	531,600	1,400	47,500	1,372,000	1,415,000	282,100	254,800	150,400	5,900	6,500	3,200	1,500	1,546,400	-
San Diego	5,195,000	4,819,000	375,300	900	84,000	2,111,000	2,244,000	46,300	18,700	5,500	46,000	2,900	6,200	-	654,600	-
San Francisco	702,000	658,000	44,300	25,500	-	336,000	366,000	-	-	-	-	-	-	-	-	-
San Joaquin	2,375,000	1,898,000	477,200	-	13,400	494,000	523,000	311,800	281,200	165,200	367,500	326,900	88,800	243,200	6,600	-
San Luis Obispo	808,000	710,000	97,800	-	5,700	134,000	152,000	59,200	56,000	200	93,400	13,500	25,400	1,500	323,500	-
San Mateo	890,000	846,000	44,100	12,500	2,000	342,000	378,000	2,100	2,100	-	300	900	1,500	-	162,800	-
Santa Barbara	972,000	858,000	114,200	-	9,200	220,000	239,000	28,400	27,200	1,900	62,200	10,700	56,300	8,800	337,600	-
Santa Clara	1,993,000	1,860,000	132,700	5,000	100,100	762,000	826,000	14,200	14,000	200	6,000	1,400	14,800	5,400	262,600	-
Santa Cruz	591,000	566,000	24,100	5,700	-	107,000	121,000	1,500	1,500	200	6,300	-	11,800	100	342,900	-
Shasta	2,585,000	2,543,000	42,100	2,400	3,100	100,000	113,000	30,400	30,000	-	1,000	20,600	1,800	900	2,314,600	-
Sierra	459,000	454,000	5,000	-	-	2,000	1,000	4,700	4,700	-	-	-	-	-	451,600	-
Siskiyou	3,588,000	3,540,000	47,600	-	200	18,000	19,000	44,000	43,600	1,900	-	55,500	1,800	-	3,449,400	-
Solano	715,000	617,000	98,400	7,900	5,800	256,000	270,000	46,500	39,000	5,500	25,400	89,700	10,700	3,800	7,300	-
Sonoma	1,803,000	1,690,000	112,900	5,800	3,000	251,000	280,000	84,000	70,200	40,500	134,500	3,600	200	15,300	1,031,700	-
Stanislaus	1,949,000	1,350,000	599,700	-	22,300	340,000	384,000	535,300	488,500	276,500	254,800	121,700	29,500	222,300	39,200	-
Sutter	829,000	804,000	25,200	-	2,400	43,000	48,000	12,300	10,600	800	71,600	519,600	8,500	123,200	-	-
Tehama	1,048,000	993,000	55,100	-	900	30,000	32,000	52,300	51,100	6,900	51,300	10,800	-	27,000	843,800	-
Trinity	2,786,000	2,782,000	3,800	-	-	5,000	5,000	3,300	3,300	-	300	-	-	-	2,772,700	-
Tulare	3,371,000	2,146,000	1,225,000	-	14,300	258,000	292,000	1,197,100	1,163,500	734,500	435,100	382,100	2,300	54,400	735,200	-
Tuolumne	889,000	858,000	30,700	-	1,000	24,000	27,000	28,400	10,400	-	-	-	-	-	808,400	-
Ventura	1,427,000	1,316,000	110,800	5,200	23,500	536,000	587,000	6,100	6,100	-	44,900	4,900	36,700	3,400	184,400	-
Yolo	773,000	696,000	77,400	500	4,300	117,000	127,000	18,900	16,600	3,300	55,000	308,300	42,700	45,900	54,300	-
Yuba	631,000	596,000	34,600	-	1,700	44,000	49,000	30,100	30,100	5,100	37,500	162,900	-	54,700	251,000	-
Other- not located	8,270,000	14,637,000	813,500	-	-	-	-	685,300	-	-	44,700	231,700	128,200	-	-	7,180,000
STATE Total	116,000,000	111,398,000	11,759,000	154,600	916,900	22,800,000	24,300,000	7,100,000	5,757,900	2,746,600	4,390,000	6,090,000	1,210,000	2,100,000	39,900,000	7,180,417

**Table 96: Summary Technical Energy Generation Potentials (MWh) by Principal Resource Category, 2017**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversion	Biosolids Landfilled (not in Total)	Biosolids Diverted	MSW Biomass Landfilled	MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Orchard and Vine	Field and Seed	Vegetable	Food Processing	Forestry	Dedicated Crop
Alameda	449,000	402,400	47,000	-	26,080	403,585	-	2,725	2,725	-	3,920	200	-	240	12,600	-
Alpine	50,000	49,400	500	-	-	500	-	400	400	-	-	-	-	-	48,900	-
Amador	239,000	233,800	5,000	-	-	12,610	-	3,750	3,750	-	6,370	50	-	240	215,800	-
Butte	970,000	960,200	10,000	-	-	57,405	-	4,137	3,900	300	82,740	250,800	10	130,400	444,700	-
Calaveras	397,000	390,500	6,400	-	-	14,040	-	4,168	4,150	-	1,820	50	-	1,200	375,600	-
Colusa	637,000	631,700	5,400	-	-	6,695	-	3,495	3,450	-	41,370	359,935	840	139,520	85,200	-
Contra Costa	353,000	282,000	70,900	-	18,560	293,195	-	3,150	3,150	100	5,180	18,050	5,955	1,120	7,600	-
Del Norte	248,000	243,100	5,000	-	480	5,315	-	4,525	4,525	2,550	-	-	-	-	237,800	-
El Dorado	879,000	872,700	6,400	-	2,400	47,800	-	1,618	1,600	-	4,620	-	-	-	822,700	-
Fresno	1,773,000	1,486,900	286,400	-	20,400	243,350	-	220,992	158,850	81,700	582,190	180,685	19,465	115,440	390,800	-
Glenn	480,000	457,800	22,200	-	560	6,340	-	21,480	21,350	12,450	55,440	218,410	-	88,080	89,700	-
Humboldt	2,029,000	2,009,900	18,800	-	1,200	25,955	-	16,193	16,175	9,100	-	-	-	80	1,985,300	-
Imperial	502,000	366,800	135,600	-	3,600	83,395	-	109,267	108,325	4,250	4,340	84,580	15,720	1,200	200,300	-
Inyo	204,000	196,300	7,400	-	-	7,185	-	2,975	2,975	-	-	-	15	1,360	192,100	-
Kern	1,420,000	1,240,800	178,900	-	18,720	250,300	-	153,649	152,600	118,300	327,390	168,205	430	166,960	334,100	-
Kings	512,000	339,900	172,100	-	2,640	35,155	-	167,300	150,825	127,400	62,580	187,265	1,290	54,320	1,400	-
Lake	430,000	427,600	2,700	-	560	14,815	-	1,285	1,200	-	17,430	1,300	-	2,480	392,400	-
Lassen	1,031,000	1,021,900	9,100	-	-	6,445	-	8,402	8,375	-	-	1,670	60	-	1,014,400	-
Los Angeles	3,403,000	2,985,700	417,400	-	211,360	3,008,970	-	2,033	1,925	1,900	840	1,000	5	320	178,500	-
Madera	752,000	657,700	94,000	-	1,200	50,450	-	86,290	73,700	54,300	244,160	13,550	280	63,920	291,900	-
Marin	117,000	93,000	24,200	-	3,760	63,740	-	10,434	10,375	7,050	210	-	10	-	39,100	-
Mariposa	251,000	246,700	4,600	-	160	4,135	-	4,250	4,250	-	350	400	-	-	242,000	-
Mendocino	1,939,000	1,932,800	6,000	-	1,280	20,240	-	3,989	3,850	950	29,400	-	15	8,960	1,875,000	-
Merced	786,000	460,500	325,500	-	2,800	83,630	-	291,456	246,425	191,000	146,160	63,235	1,975	193,040	3,700	-
Modoc	661,000	645,500	15,100	-	-	1,980	-	14,645	14,600	-	-	11,300	270	-	632,400	-
Mono	162,000	159,700	2,700	-	-	11,380	-	1,250	1,250	-	-	-	5	-	149,700	-
Monterey	375,000	339,800	34,900	-	4,320	110,040	-	12,599	12,500	950	63,770	10,120	11,435	20,800	141,600	-
Napa	333,000	325,700	7,000	-	2,400	47,245	-	1,414	1,400	-	69,300	-	-	17,040	195,300	-
Nevada	491,000	487,500	3,100	-	1,280	21,420	-	964	950	-	560	-	-	-	466,400	-
Orange	1,204,000	948,000	255,600	-	56,560	1,130,930	-	175	175	-	70	-	70	1,520	14,300	-
Placer	512,000	498,700	12,900	-	-	93,385	-	3,642	3,525	550	2,380	22,950	-	8,480	380,800	-
Plumas	1,015,000	1,012,600	2,900	-	160	5,865	-	2,300	2,300	-	-	-	-	-	1,007,100	-
Riverside	1,378,000	1,118,500	259,300	-	61,440	831,390	-	98,415	67,525	49,900	37,940	19,085	4,985	1,920	322,700	-
Sacramento	587,000	498,400	89,000	-	13,200	430,970	-	20,732	18,700	10,700	50,750	62,915	445	7,360	1,000	-
San Benito	110,000	97,500	12,200	-	2,880	17,775	-	9,057	8,900	550	9,730	1,615	1,355	4,720	62,600	-
San Bernardino	1,752,000	1,514,100	238,300	-	38,000	686,005	-	114,399	101,300	75,200	4,130	2,200	295	1,200	906,100	-
San Diego	1,534,000	1,351,800	181,800	-	67,200	1,055,295	-	19,774	6,050	2,750	32,200	995	670	-	357,500	-
San Francisco	168,000	145,900	22,100	-	-	167,975	-	-	-	-	-	-	-	-	-	-
San Joaquin	991,000	819,100	171,800	-	10,720	247,095	-	125,741	111,600	82,600	257,250	144,100	7,725	194,560	3,700	-
San Luis Obispo	342,000	318,900	22,600	-	4,560	66,850	-	14,749	14,050	100	65,380	6,750	1,270	1,200	180,800	-
San Mateo	230,000	209,300	20,800	-	1,600	171,040	-	525	525	-	210	450	75	-	56,200	-
Santa Barbara	303,000	278,100	25,000	-	7,360	110,055	-	7,410	7,275	950	43,540	3,490	2,815	7,040	121,400	-
Santa Clara	583,000	525,300	58,200	-	80,080	380,905	-	3,559	3,550	100	4,200	520	2,765	4,320	107,100	-
Santa Cruz	208,000	201,400	6,400	-	-	53,265	-	425	425	100	4,410	-	590	80	149,100	-
Shasta	1,423,000	1,410,800	12,500	-	2,480	49,780	-	7,518	7,500	-	700	10,300	90	720	1,351,700	-
Sierra	293,000	292,000	1,300	-	-	830	-	1,175	1,175	-	-	-	-	-	291,300	-
Siskiyou	1,688,000	1,675,400	12,400	-	160	9,005	-	11,393	11,375	950	-	23,430	90	-	1,643,700	-
Solano	209,000	176,300	32,800	-	4,640	128,000	-	11,590	11,125	2,750	17,780	38,865	535	3,040	4,600	-
Sonoma	778,000	730,300	47,800	-	2,400	125,435	-	33,194	27,675	20,250	94,150	400	10	12,240	510,200	-
Stanislaus	798,000	564,700	233,700	-	17,840	170,055	-	214,427	191,250	138,250	178,360	20,930	1,475	177,840	17,500	-
Sutter	431,000	425,800	5,600	-	1,920	21,620	-	2,936	2,850	400	50,120	255,840	425	98,560	-	-
Tehama	596,000	580,300	16,000	-	720	14,865	-	14,635	14,500	3,450	35,910	4,870	-	21,600	503,700	-
Trinity	1,120,000	1,119,100	1,100	-	-	2,305	-	825	825	-	210	-	-	-	1,116,800	-
Tulare	1,419,000	918,200	500,500	-	11,440	128,995	-	487,206	474,500	367,250	304,570	140,810	475	43,520	301,700	-
Tuolumne	571,000	558,200	12,800	-	800	12,060	-	11,600	2,600	-	-	-	-	546,500	-	-
Ventura	377,000	339,500	38,000	-	18,800	268,055	-	1,525	1,525	-	31,430	2,450	2,510	2,720	50,000	-
Yolo	306,000	290,900	15,200	-	3,440	58,475	-	5,168	4,975	1,650	38,500	128,905	2,135	36,720	32,700	-
Yuba	370,000	359,300	11,100	-	1,360	21,970	-	8,800	8,800	2,550	26,250	81,450	-	43,760	186,800	-
Other- not located	6,710,000	13,048,100	127,700	-	-	-	-	118,838	-	-	31,290	92,450	8,840	-	-	6,462,000
STATE Total	49,900,000	51,974,800	4,371,700	-	733,520	11,397,565	-	2,510,000	2,126,125	1,373,300	3,070,000	2,640,000	97,000	1,680,000	21,300,000	6,462,375

**Table 97: Summary Gross Energy Generation Potentials (MWh) by Principal Resource Category, 2020**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversion	Biosolids Landfilled (not in Total)	Biosolids Diverted	MSW Biomass Landfilled	MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Orchard and Vine	Field and Seed	Vegetable	Food Processing	Forestry	Dedicated Crop
Alameda	1,828,000	1,727,000	101,000	4,500	33,300	823,000	920,000	11,100	11,100	-	6,000	400	-	300	33,700	-
Alpine	174,100	173,000	2,000	-	-	1,000	2,000	1,600	1,600	-	-	-	-	-	169,500	-
Amador	392,700	374,000	19,000	-	-	27,000	31,000	15,800	15,800	-	9,700	100	-	300	308,800	-
Butte	1,784,400	1,755,000	30,000	3,000	-	122,000	137,000	16,900	15,900	700	124,000	530,900	200	172,600	680,800	-
Calaveras	625,800	604,000	22,000	-	-	29,000	30,000	17,600	17,300	-	2,800	100	-	1,500	544,800	-
Colusa	1,220,800	1,185,000	35,000	-	-	15,000	16,000	15,800	14,800	-	62,700	772,500	16,900	184,300	137,600	-
Contra Costa	1,331,000	1,175,000	156,000	12,000	24,100	610,000	604,000	12,900	12,900	200	7,900	35,200	14,500	1,400	21,000	-
Del Norte	829,600	815,000	15,000	-	600	11,000	13,000	13,700	13,700	5,400	-	-	-	-	791,300	-
El Dorado	1,341,400	1,324,000	17,000	200	3,100	101,000	114,000	7,000	6,700	-	6,900	-	-	-	1,109,400	-
Fresno	4,294,900	3,348,000	947,000	-	27,100	518,000	585,000	639,700	502,500	173,900	885,300	346,100	228,200	143,800	921,700	-
Glenn	923,200	856,000	67,000	-	800	14,000	15,000	65,600	64,500	26,500	83,600	464,300	-	116,600	163,300	-
Humboldt	4,414,400	4,361,000	53,000	-	1,500	53,000	60,000	47,600	47,200	18,500	-	1,200	-	100	4,251,000	-
Imperial	1,443,200	837,000	606,000	-	4,900	180,000	198,000	478,700	458,300	9,200	6,300	215,600	104,200	1,200	254,300	-
Inyo	803,600	783,000	20,000	-	-	15,000	10,000	12,200	12,200	-	-	-	300	1,700	764,400	-
Kern	3,395,900	2,915,000	481,000	-	25,000	537,000	607,000	419,500	401,000	253,800	501,200	469,500	8,300	216,700	611,700	-
Kings	1,189,400	746,000	443,000	-	3,500	76,000	85,000	409,300	374,000	273,400	94,700	425,200	25,900	66,400	3,400	-
Lake	738,900	731,000	8,000	-	700	31,000	35,000	5,200	5,000	-	25,900	2,600	-	3,200	635,300	-
Lassen	1,294,100	1,257,000	38,000	300	-	13,000	15,000	35,300	34,800	-	-	3,700	1,200	-	1,225,900	-
Los Angeles	13,438,900	12,588,000	851,000	46,700	269,200	6,133,000	6,634,000	4,500	3,900	3,800	1,300	2,000	100	400	394,400	-
Madera	1,423,400	1,170,000	253,000	-	1,600	110,000	117,000	231,500	202,400	118,000	373,800	50,000	5,600	83,300	450,600	-
Marin	367,400	311,000	57,000	-	4,700	128,000	125,000	28,700	27,500	14,200	300	2,000	200	-	78,500	-
Mariposa	398,400	380,000	19,000	-	200	9,000	9,000	17,700	17,700	-	500	800	-	-	361,200	-
Mendocino	4,336,400	4,316,000	20,000	-	1,700	42,000	47,000	15,300	14,000	1,900	44,300	-	300	11,200	4,174,600	-
Merced	1,871,200	1,033,000	838,000	-	3,700	180,000	200,000	749,700	650,900	411,800	223,300	221,200	39,500	247,400	6,400	-
Modoc	844,100	775,000	69,000	-	-	4,000	5,000	63,500	62,500	-	-	30,000	5,400	-	736,200	-
Mono	348,900	341,000	8,000	-	-	24,000	27,000	5,400	5,400	-	-	-	100	-	292,400	-
Monterey	1,268,200	963,000	305,000	2,000	5,500	226,000	256,000	49,600	49,200	1,900	97,400	20,600	233,300	26,000	353,800	-
Napa	657,500	640,000	18,000	-	3,100	99,000	109,000	6,100	5,800	-	105,800	-	-	21,300	313,200	-
Nevada	756,900	749,000	9,000	2,600	1,700	44,000	51,000	4,200	3,900	-	900	-	-	-	655,100	-
Orange	4,714,500	4,187,000	528,000	8,100	72,700	2,329,000	2,263,000	800	800	-	100	-	1,500	2,000	45,400	-
Placer	1,133,900	1,099,000	35,000	4,900	-	199,000	225,000	14,700	13,800	1,100	3,600	48,500	-	11,500	631,600	-
Plumas	1,496,300	1,486,000	11,000	-	200	12,000	14,000	9,400	9,400	-	-	-	-	-	1,460,700	-
Riverside	4,775,200	4,147,000	629,000	-	83,300	1,806,000	1,840,000	258,300	184,900	108,300	55,500	41,400	31,400	2,000	657,300	-
Sacramento	2,134,500	1,925,000	209,000	-	17,000	891,000	942,000	59,900	55,200	22,100	75,700	128,800	9,000	9,700	1,400	-
San Benito	300,900	226,000	74,000	-	3,800	39,000	43,000	38,500	37,700	1,200	14,700	3,400	32,000	5,900	120,600	-
San Bernardino	4,857,800	4,296,000	562,000	1,500	50,200	1,450,000	1,496,000	298,300	269,400	159,000	6,000	6,200	3,200	1,500	1,546,400	-
San Diego	5,336,200	4,949,000	387,000	900	86,700	2,178,000	2,316,000	47,900	19,200	5,700	44,200	2,500	6,300	-	654,600	-
San Francisco	709,000	665,000	45,000	25,700	-	339,000	370,000	-	-	-	-	-	-	-	-	-
San Joaquin	2,514,800	2,004,000	511,000	-	14,500	536,000	568,000	338,100	305,000	179,100	393,000	320,800	89,600	248,200	6,600	-
San Luis Obispo	820,200	720,000	100,000	-	5,800	137,000	155,000	60,500	57,300	200	98,800	12,000	26,100	1,500	323,500	-
San Mateo	896,600	852,000	45,000	12,600	21,100	345,000	382,000	2,100	2,100	-	300	800	1,500	-	162,800	-
Santa Barbara	985,000	868,000	117,000	-	9,300	224,000	243,000	28,800	27,600	1,900	64,900	10,400	58,200	8,800	337,600	-
Santa Clara	2,031,800	1,896,000	137,000	5,100	102,400	779,000	844,000	14,500	14,300	200	6,500	1,400	15,900	5,500	262,600	-
Santa Cruz	594,600	570,000	25,000	5,800	-	109,000	123,000	1,500	1,500	200	6,000	-	12,100	100	342,900	-
Shasta	2,599,300	2,555,000	44,000	2,600	3,300	105,000	119,000	31,900	31,600	-	1,000	21,800	1,800	900	2,314,600	-
Sierra	459,300	454,000	5,000	-	-	2,000	1,000	4,700	4,700	-	-	-	-	-	451,600	-
Siskiyou	3,589,300	3,541,000	49,000	-	200	18,000	20,000	45,100	44,700	1,900	-	54,800	1,800	-	3,449,400	-
Solano	740,800	639,000	102,000	8,300	6,100	266,000	282,000	48,400	40,600	5,800	26,600	89,800	10,700	3,900	7,300	-
Sonoma	1,830,400	1,714,000	116,000	5,900	3,100	258,000	289,000	86,500	72,200	41,700	143,100	3,500	200	15,300	1,031,700	-
Stanislaus	2,066,700	1,424,000	642,000	-	23,900	364,000	411,000	572,900	522,700	295,900	271,100	121,400	32,300	230,900	39,200	-
Sutter	874,600	847,000	27,000	-	2,700	48,000	53,000	13,600	11,700	900	72,600	546,400	8,400	129,900	-	-
Tehama	1,059,100	1,000,000	59,000	-	1,000	32,000	35,000	55,500	54,300	7,400	52,800	10,700	-	28,300	843,800	-
Trinity	2,786,500	2,782,000	4,000	-	-	5,000	5,000	3,500	3,500	-	300	-	-	-	2,772,700	-
Tulare	3,525,900	2,203,000	1,323,000	-	15,500	279,000	316,000	1,293,000	1,256,800	793,200	455,200	374,800	2,300	54,900	735,200	-
Tuolumne	891,700	860,000	32,000	-	1,000	25,000	28,000	29,300	10,700	-	-	-	-	-	808,400	-
Ventura	1,468,800	1,353,000	115,000	5,400	24,300	555,000	608,000	6,400	6,400	-	43,900	4,800	38,500	3,500	184,400	-
Yolo	803,400	724,000	80,000	500	4,500	123,000	135,000	20,100	17,600	3,500	57,900	317,200	43,000	48,400	54,300	-
Yuba	656,600	618,000	38,000	-	2,000	49,000	54,000	33,100	33,100	5,600	37,800	172,300	-	57,400	251,000	-
Other - not located	8,314,000	14,639,000	855,000	-	-	-	-	710,900	-	-	45,000	233,500	144,400	-	-	7,180,000
STATE Total	119,000,000	113,500,000	12,413,000	158,600	952,000	23,700,000	25,200,000	7,530,000	6,161,300	2,948,100	4,640,000	6,120,000	1,250,000	2,170,000	39,900,000	7,180,417

**Table 98: Summary Technical Energy Generation Potentials (MWh) by Principal Resource Category, 2020**

County Name	Total Biomass	Total for Thermal Conversion	Total for Biochemical Diversion	Biosolids Landfilled (not in Total)	Biosolids Diverted	MSW Biomass Landfilled	MSW Biomass Diverted	Total Animal Manure	Total Cattle manure	Dairy manure	Orchard and Vine	Field and Seed	Vegetable	Food Processing	Forestry	Dedicated Crop
Alameda	458,000	410,200	47,900	-	26,600	411,600	-	2,800	2,800	-	4,200	-	-	240	12,600	-
Alpine	50,000	49,500	500	-	-	600	-	400	400	-	-	-	-	-	48,900	-
Amador	240,000	234,800	5,400	-	-	13,300	-	4,000	4,000	-	6,800	-	-	240	215,800	-
Butte	1,000,000	989,800	10,600	-	-	60,900	-	4,400	4,200	350	86,800	265,500	10	138,080	444,700	-
Calaveras	398,000	391,100	6,700	-	-	14,550	-	4,400	4,300	-	2,000	-	-	1,200	375,600	-
Colusa	668,000	662,300	5,800	-	-	7,250	-	3,800	3,700	-	43,900	379,600	850	147,440	85,200	-
Contra Costa	365,000	291,000	73,800	-	19,300	304,950	-	3,300	3,300	100	5,500	16,700	6,310	1,120	7,600	-
Del Norte	249,000	243,400	5,300	-	500	5,550	-	4,800	4,800	2,700	-	-	-	-	237,800	-
El Dorado	882,000	875,200	6,800	-	2,500	50,300	-	1,700	1,700	-	4,800	-	-	-	822,700	-
Fresno	1,823,000	1,520,000	302,900	-	21,700	258,950	-	235,300	169,100	86,950	619,700	161,300	20,050	115,040	390,800	-
Glenn	501,000	477,000	23,700	-	600	6,850	-	22,900	22,800	13,250	58,500	228,900	-	93,280	89,700	-
Humboldt	2,029,000	2,010,300	19,200	-	1,200	26,400	-	16,500	16,400	9,250	-	-	-	80	1,985,300	-
Imperial	482,000	335,900	146,000	-	3,900	89,850	-	117,900	116,900	4,600	4,400	47,900	16,640	960	200,300	-
Inyo	204,000	196,400	7,600	-	-	7,400	-	3,100	3,100	-	-	-	20	1,360	192,100	-
Kern	1,473,000	1,281,300	191,900	-	20,000	268,300	-	164,900	163,700	126,900	350,800	161,300	420	173,360	334,100	-
Kings	490,000	305,600	184,600	-	2,800	37,750	-	179,500	161,900	136,700	66,300	148,000	1,300	53,120	1,400	-
Lake	431,000	427,700	3,000	-	600	15,500	-	1,400	1,300	-	18,100	100	-	2,560	392,400	-
Lassen	1,031,000	1,021,900	9,500	-	-	6,650	-	8,700	8,700	-	-	1,500	60	-	1,014,400	-
Los Angeles	3,464,000	3,038,400	425,400	-	215,400	3,066,450	-	2,100	1,900	1,900	900	100	10	320	178,500	-
Madera	781,000	678,800	102,200	-	1,300	54,900	-	93,800	80,100	59,000	261,700	10,500	280	66,640	291,900	-
Marin	118,000	93,200	24,400	-	3,800	63,950	-	10,500	10,400	7,100	200	-	10	-	39,100	-
Mariposa	251,000	246,600	4,800	-	200	4,400	-	4,400	4,400	-	400	-	-	-	242,000	-
Mendocino	1,941,000	1,935,200	6,200	-	1,400	20,900	-	4,100	4,000	950	31,000	-	20	8,960	1,875,000	-
Merced	825,000	476,000	349,100	-	3,000	90,200	-	314,300	265,700	205,900	156,300	57,700	1,980	197,920	3,700	-
Modoc	662,000	645,800	16,200	-	-	2,150	-	15,700	15,600	-	-	11,400	270	-	632,400	-
Mono	163,000	160,300	2,900	-	-	12,000	-	1,400	1,400	-	-	-	10	-	149,700	-
Monterey	380,000	344,600	35,800	-	4,400	112,900	-	12,900	12,800	950	68,200	7,900	11,670	20,800	141,600	-
Napa	340,000	332,500	7,400	-	2,500	49,450	-	1,500	1,500	-	74,100	-	-	17,040	195,300	-
Nevada	492,000	488,300	3,300	-	1,400	22,150	-	1,000	1,000	-	600	-	-	-	466,400	-
Orange	1,239,000	975,900	263,400	-	58,200	1,164,700	-	200	200	-	100	-	120	1,600	14,300	-
Placer	520,000	506,400	13,900	-	-	99,550	-	3,900	3,700	550	2,500	24,300	-	9,200	380,800	-
Plumas	1,016,000	1,012,800	3,000	-	200	6,100	-	2,400	2,400	-	-	-	-	-	1,007,100	-
Riverside	1,462,000	1,180,900	281,400	-	66,600	902,900	-	106,800	73,300	54,150	38,900	17,600	5,220	1,600	322,700	-
Sacramento	603,000	511,100	92,000	-	13,600	445,450	-	21,400	19,300	11,050	53,000	60,400	450	7,760	1,000	-
San Benito	112,000	98,800	13,500	-	3,000	19,300	-	9,900	9,700	600	10,300	800	1,600	4,720	62,600	-
San Bernardino	1,799,000	1,547,000	251,900	-	40,200	725,200	-	121,000	107,100	79,500	4,200	700	300	1,200	906,100	-
San Diego	1,569,000	1,381,100	187,700	-	69,400	1,088,950	-	20,500	6,200	2,850	30,900	800	720	-	357,500	-
San Francisco	170,000	147,400	22,400	-	-	169,700	-	-	-	-	-	-	-	-	-	-
San Joaquin	1,038,000	852,000	185,800	-	11,600	267,850	-	136,300	121,000	89,550	275,100	136,700	7,950	198,560	3,700	-
San Luis Obispo	345,000	321,400	23,200	-	4,600	68,450	-	15,100	14,400	100	69,200	3,900	1,310	1,200	180,800	-
San Mateo	232,000	210,600	21,000	-	1,700	172,500	-	500	500	-	200	400	80	-	56,200	-
Santa Barbara	307,000	281,100	25,400	-	7,400	112,050	-	7,500	7,400	950	45,400	2,800	2,910	7,040	121,400	-
Santa Clara	595,000	535,000	59,600	-	81,900	389,600	-	3,600	3,600	100	4,600	400	2,910	4,400	107,100	-
Santa Cruz	209,000	202,200	6,600	-	-	54,400	-	400	400	100	4,200	-	610	80	149,100	-
Shasta	1,427,000	1,413,800	13,100	-	2,600	52,350	-	7,900	7,900	-	700	10,900	90	720	1,351,700	-
Sierra	293,000	292,000	1,400	-	-	850	-	1,200	1,200	-	-	-	-	-	291,300	-
Siskiyou	1,688,000	1,675,200	12,700	-	200	9,200	-	11,700	11,700	950	-	23,000	90	-	1,643,700	-
Solano	215,000	180,600	34,100	-	4,900	133,050	-	12,100	11,600	2,900	18,600	37,700	540	3,120	4,600	-
Sonoma	789,000	739,600	49,100	-	2,500	128,950	-	34,200	28,500	20,850	100,200	400	10	12,240	510,200	-
Stanislaus	842,000	591,600	250,000	-	19,100	181,850	-	229,500	204,700	147,950	189,800	17,500	1,620	184,720	17,500	-
Sutter	453,000	446,500	6,200	-	2,200	23,750	-	3,300	3,200	450	50,800	268,300	420	103,920	-	-
Tehama	600,000	583,200	17,200	-	800	15,800	-	15,600	15,400	3,700	37,000	4,800	-	22,640	503,700	-
Trinity	1,120,000	1,119,200	1,200	-	-	2,450	-	900	900	-	200	-	-	-	1,116,800	-
Tulare	1,480,000	939,300	540,500	-	12,400	139,250	-	526,200	512,500	396,600	318,600	137,200	520	43,920	301,700	-
Tuolumne	572,000	558,500	13,300	-	800	12,400	-	12,000	2,700	-	-	-	-	-	546,500	-
Ventura	386,000	346,500	39,500	-	19,400	277,350	-	1,600	1,600	-	30,700	1,400	2,650	2,800	50,000	-
Yolo	302,000	286,200	16,000	-	3,600	61,700	-	5,500	5,300	1,750	40,500	117,300	2,150	38,720	32,700	-
Yuba	379,000	367,000	12,200	-	1,600	24,350	-	9,700	9,700	2,800	26,500	84,300	-	45,920	186,800	-
Other- not located	6,710,000	13,036,100	133,100	-	-	-	-	123,300	-	-	31,500	80,200	9,790	-	-	6,462,000
STATE Total	50,700,000	52,502,000	4,619,000	-	762,000	11,836,100	-	2,700,000	2,277,600	1,474,050	3,250,000	2,530,000	102,000	1,740,000	21,300,000	6,462,375

### 3.4 Alternative Landfill Gas Generation Estimate<sup>20</sup>

Because landfill gas is the only resource considered here that is dependent on past as well as future disposal practices, an alternative model was developed to test the sensitivity to different assumptions. The alternative model is similar to the LandGEM model developed by USEPA.<sup>21</sup> The model assumes a first order decay of waste beginning the first year after placement. The gas generation rate,  $g_n$  ( $\text{ft}^3/\text{y}$  or  $\text{m}^3 \text{ y}^{-1}$ ), as a function of time for waste placed in the landfill in any year  $n$  is

$$g_n = W_n L e^{-kt} \quad [5]$$

$W_n$  = quantity of waste placed in year  $n$  (wet tons or Mg (megagrams or metric ton))

$L$  = methane generation potential factor ( $\text{ft}^3/\text{ton-y}$  or  $\text{m}^3 \text{ Mg}^{-1} \text{ y}^{-1}$ )

$k$  = rate constant ( $\text{y}^{-1}$ )

$t$  = time from base year (y)

Total gas generation,  $g_t$  ( $\text{ft}^3/\text{y}$  or  $\text{m}^3 \text{ y}^{-1}$ ), is the sum over all years up to the current year as shown by equation [6].

$$g_t = \sum_n g_n = L \sum_n W_n e^{-kt} \quad [6]$$

Landfill gas generation for the period 1970 – 2020 was estimated on a statewide basis for waste placed beginning in 1970. Waste disposal was estimated from statewide population and per capita disposal rates for years prior to 1990 and on population growth projections after 2003. Actual disposal data were used for the period between 1990 and 2003. Waste placed in landfills in the state is tracked by the California Board of Equalization. The Board assesses a disposal fee on landfill operators for each ton of waste disposed. Board data on waste-in-place total 507 million tons (as-received) for the period 1990 through 2003 (Table 99). Data have also been compiled by US EPA as part of the landfill methane outreach program (LMOP). For 217 California landfills either having installed landfill gas to energy facilities or considered to be good potential candidate sites for development, the LMOP data yield a total waste-in-place of 937 million tons. The earliest operating date for the landfills included is 1922 but most have opened since 1950. The landfill gas production potential derived here based on all statewide disposal since 1970 yields a total waste-in-place for 1970-2003 of 1.04 billion tons, a

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<sup>20</sup> This section is repeated from the previous assessment report due to the historical basis of the analysis.

<sup>21</sup> Pelt, R., et al. 1998. User's manual, Landfill gas emissions model v. 2.0, US Environmental Protection Agency, Washington, D.C.

difference of 11% compared with the USEPA LMOP estimate. Disposal post-1990 contributes most of the landfill gas by 2020.

For conventional landfill, the model estimates were based on USEPA AP-42<sup>22</sup> parameters with  $k = 0.04 \text{ y}^{-1}$  and  $L = 4 \text{ m}^3 \text{ Mg}^{-1} \text{ y}^{-1}$  yielding an ultimate methane generation potential of  $100 \text{ m}^3/\text{Mg}$  ( $3,200 \text{ ft}^3/\text{ton}$ ) for disposal post-1970. These assumptions yield a higher ultimate biomethane potential ( $1.6 \text{ ft}^3/\text{lb}$  or  $0.1 \text{ m}^3 \text{ kg}^{-1}$ ) than the constant-rate model used earlier. Gross electric capacity was based on total methane generation with a biogas to electricity conversion efficiency of 30% and annual capacity factor of 85%. Potential electric capacity assumes an average of 67% methane recovery based on AP-42 data, 30% electrical conversion efficiency, and 85% capacity factor. The total methane generation for conventional landfilling assuming no change in the current per capita waste disposal rate increases from 80 to 110 billion cubic feet per year (BCF/y) between 2005 and 2020 with gross electricity generation capacity increasing from 939 to 1,257 MWe (Figure 10). Technical generation capacity using the exponential decay model ranges from 629 to 842 MWe. The methane yield from landfills in the state is about 5% of current natural gas consumption (2,572 BCF/y in 2004).

An analysis was also performed for bioreactor landfills that have the potential to increase gas generation rates. An estimate was made assuming all waste was disposed in landfill bioreactors instead of conventional landfills beginning in 2004. Total gas production then includes gas from waste placed in conventional landfills prior to 2004 and gas from bioreactors after that. This estimate represents an upper bound on the landfill gas production capacity for the biomethanation assumptions used. For bioreactor landfills,  $k = 0.08 \text{ y}^{-1}$  and  $L = 7.7 \text{ m}^3 \text{ Mg}^{-1} \text{ y}^{-1}$  with the same ultimate methane generation potential. By 2020, total methane generation is 145 BCF/y with a gross electricity generation potential of 1657 MWe and a technical potential of 1110 MWe.

Sensitivity was also tested to assumptions regarding per-capita waste disposal rates. For conventional landfilling, decreasing per-capita disposal at a rate equal to the population growth rate (1.43%/y) and holding total waste disposal constant beyond 2002 decreases methane production in 2020 to 100 BCF/y and gross generation capacity to 1149 MWe (Figure 12) compared with no change in per-capita disposal. For a 5% per year decline after 2005 in the per-capita disposal rate, the total methane generation from conventional landfill peaks around 2014 and begins to decline (Figure 13). The same rate of decline in per-capita disposal would also begin to decrease total gas production even if bioreactor landfills are adopted (Figure 14).

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<sup>22</sup> USEPA-42, op cit.

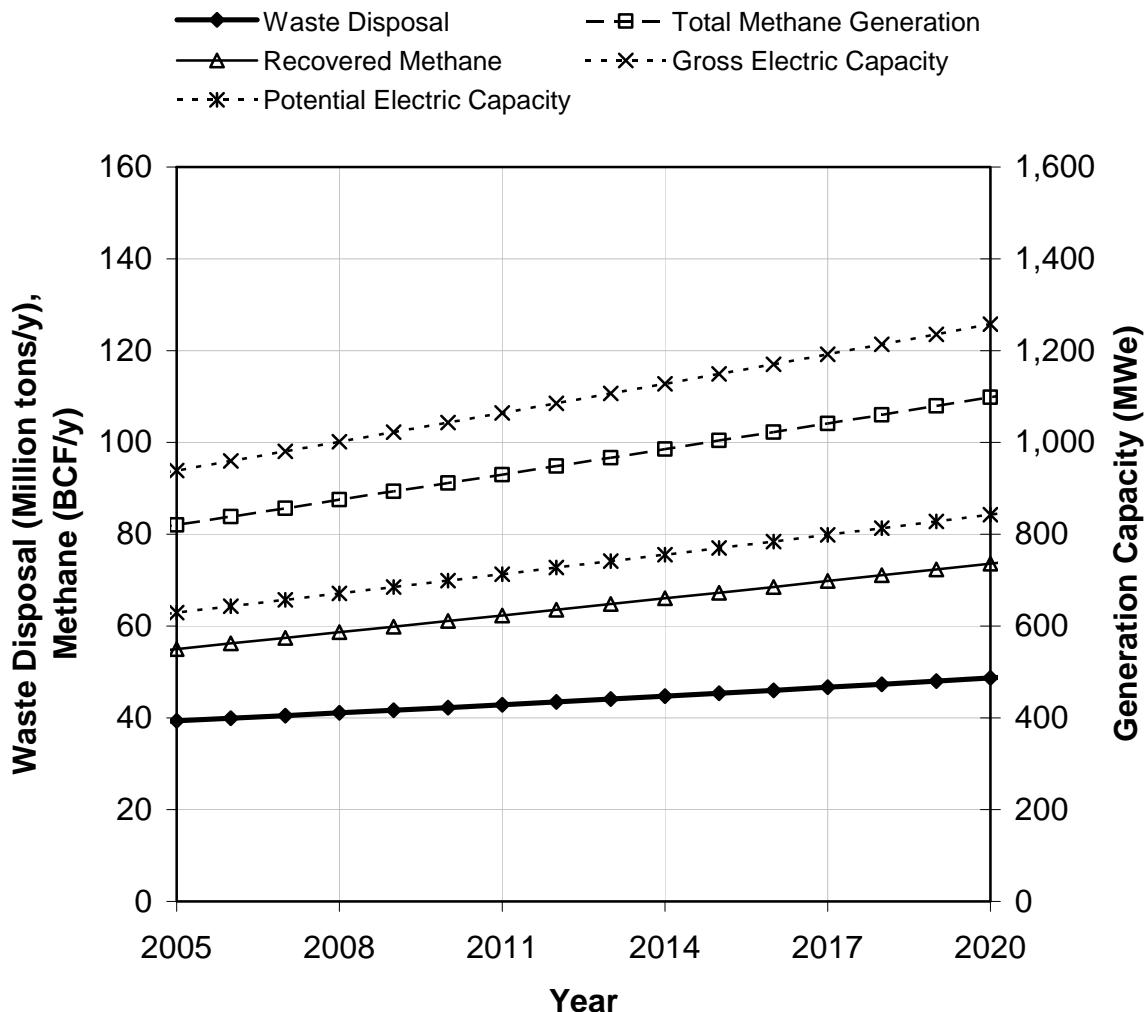
**Table 99: Waste-in-Place in California Landfills (total as-received tons as of 2003).**

COUNTY	Waste-in-Place (1922- )*	Waste-in-Place (1990- )**
ALAMEDA	53,133,556	32,204,962
ALPINE		
AMADOR	1,013,553	380,201
BUTTE	4,590	2,324,336
CALAVERAS	0	449,458
COLUSA	0	63,223
CONTRA COSTA	24,480,056	9,854,877
DEL NORTE	806,400	217,917
EL DORADO	1,000,000	431,236
FRESNO	13,491,089	9,233,518
GLENN	540,000	293,243
HUMBOLDT	1,314,723	1,021,988
IMPERIAL	1,308,493	2,330,774
INYO	64,415	208,560
KERN	23,986,408	11,217,202
KINGS	2,559,600	2,738,413
LAKE	0	636,112
LASSEN	328,835	251,109
LOS ANGELES	349,836,365	152,110,915
MADERA	0	1,221,134
MARIN	1,135,488	4,661,992
MARIPOSA	720,000	162,637
MENDOCINO	3,064,253	621,744
MERCED	0	2,806,563
MODOC	33,872	9,791
MONO	381,084	241,189
MONTEREY	8,703,149	6,180,846
NAPA	5,325,741	1,545,845
NEVADA	2,182,268	99,461
ORANGE	102,864,644	55,842,906
PLACER	2,000,000	2,881,839
PLUMAS	418,500	80,462
RIVERSIDE	45,838,437	26,580,852
SACRAMENTO	22,114,800	13,562,640
SAN BENITO	0	753,884
SAN BERNARDINO	39,072,537	20,184,875
SAN DIEGO	68,196,111	42,257,390
SAN FRANCISCO		
SAN JOAQUIN	17,335,690	14,351,399
SAN LUIS OBISPO	4,434,018	3,227,470
SAN MATEO	14,128,242	12,416,079
SANTA BARBARA	11,013,583	5,947,765
SANTA CLARA	29,450,000	21,494,721
SANTA CRUZ	7,320,427	3,266,997
SHASTA	2,311,985	2,961,171
SIERRA	56,400	37,760
SISKIYOU	0	271,180
SOLANO	3,318,000	6,746,820
SONOMA	15,202,669	6,622,553
STANISLAUS	2,942,398	1,987,224
SUTTER		
TEHAMA	0	577,580
TRINITY	147,000	72,541
TULARE	7,912,300	4,160,276
TUOLUMNE	1,227,600	141,784
VENTURA	25,128,809	11,697,399
YOLO	8,961,340	2,643,640
YUBA	10,045,440	2,268,759
<b>Grand Total</b>	<b>936,854,868</b>	<b>506,557,212</b>

\*For 217 landfills with existing or potential landfill gas to energy recovery. Source: USEPA, Landfill Methane Outreach Program, <http://www.epa.gov/lmop/proj/index.htm>

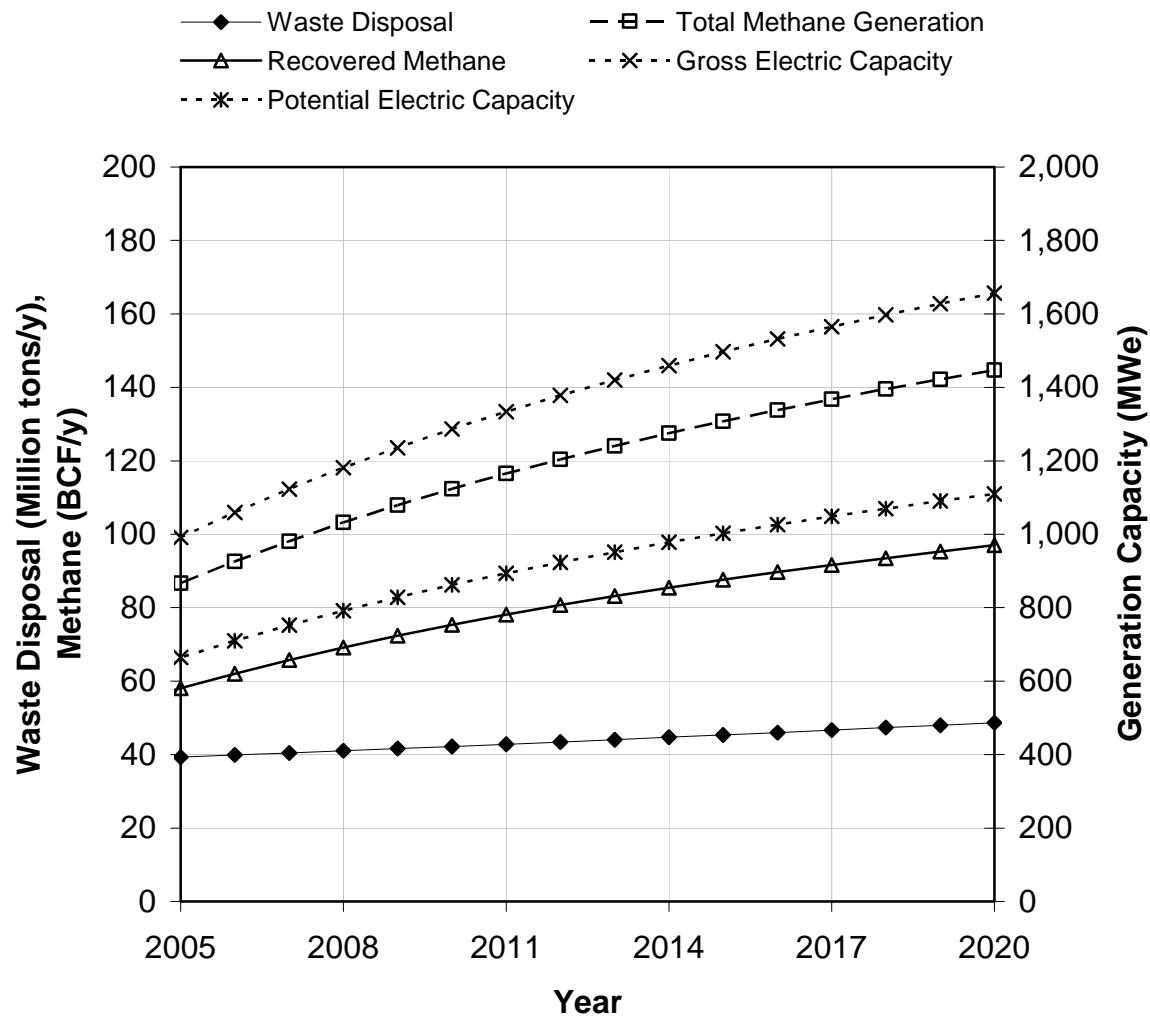
\*\*For 330 active landfills. Source: California Integrated Waste Management Board and California Board of Equalization

**Figure 10: Electricity Generation Potential from Conventional Landfill Gas in California \***



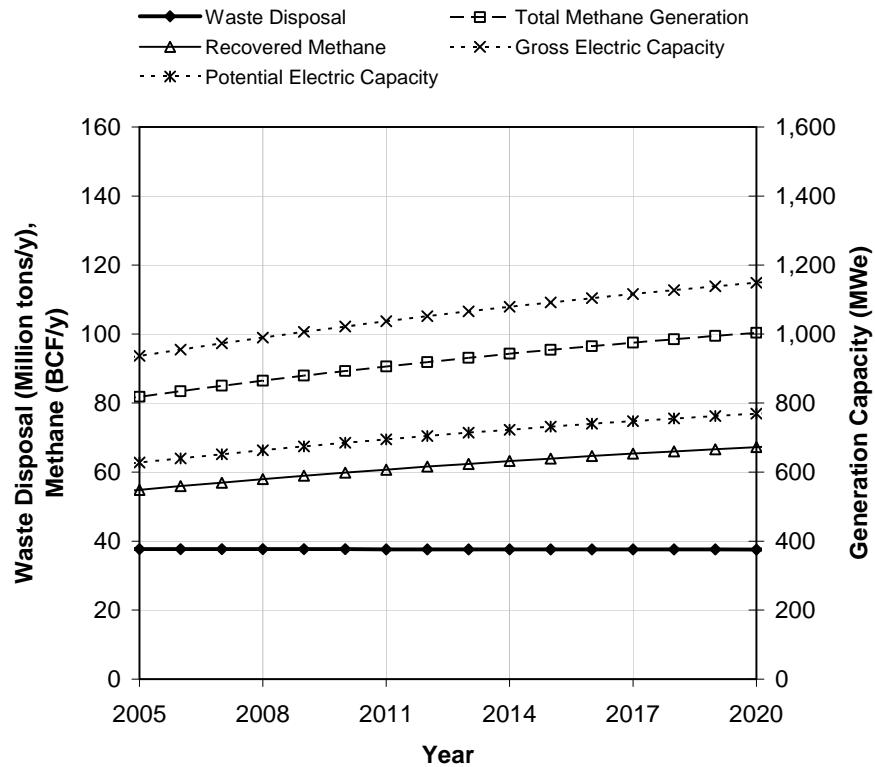
\*Model estimates based on first order decay of waste using USEPA AP-42 parameters (methane generation potential =  $100 \text{ m}^3/\text{Mg}$ , methane generation rate constant  $k = 0.04 \text{ y}^{-1}$ ) for disposal post-1970. Gross electric capacity based on total methane generation, 30% methane conversion efficiency, and 85% capacity factor. Potential electric capacity assumes 67% methane recovery (recovered methane), 30% electrical conversion efficiency, and 85% capacity factor. MSW disposal assumes a population growth rate of  $1.43\% \text{ y}^{-1}$  beyond 2003 and no change in current annual per capita disposal rate. Actual population data used for period 1970-2003, actual waste disposal data used for period 1990-2002. Disposal pre-1990 estimated from population. Methane production is estimated only for waste disposed post-1970.

**Figure 11: Electricity Generation Potential from Landfill and Bioreactor Landfill Gas in California \***

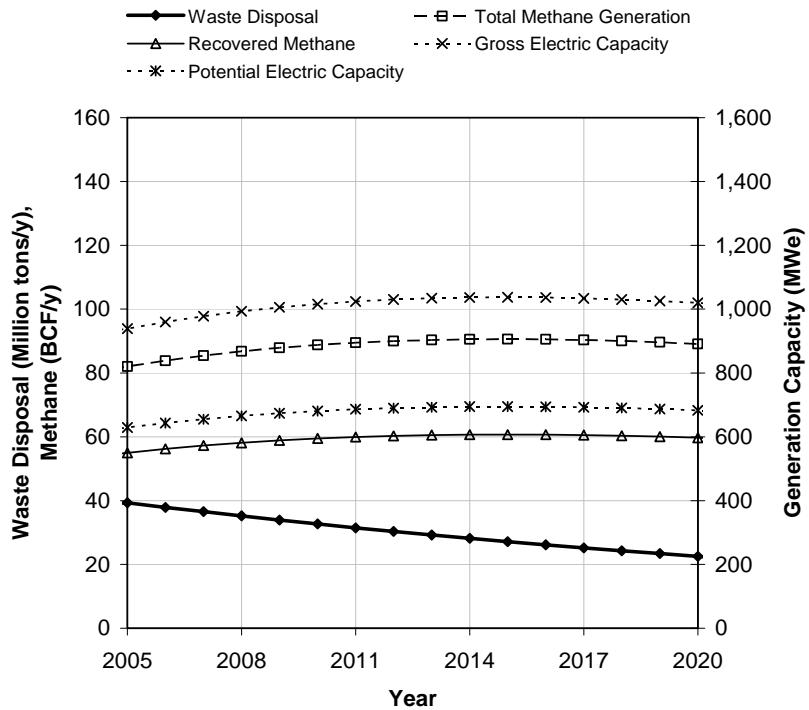


\*Model estimates based on first order decay of waste using USEPA AP-42 parameters (methane generation potential =  $100 \text{ m}^3/\text{Mg}$ , methane generation rate constant  $k = 0.04 \text{ y}^{-1}$ ) for conventional landfill disposal 1970-2004 changing to  $k=0.08 \text{ y}^{-1}$  for landfill bioreactor disposal post-2004. Gross electric capacity based on total methane generation, 30% methane conversion efficiency, and 85% capacity factor. Potential electric capacity assumes 67% methane recovery (recovered methane), 30% electrical conversion efficiency, and 85% capacity factor. MSW disposal assumes a population growth rate of  $1.43\% \text{ y}^{-1}$  and no change in current annual per capita disposal.

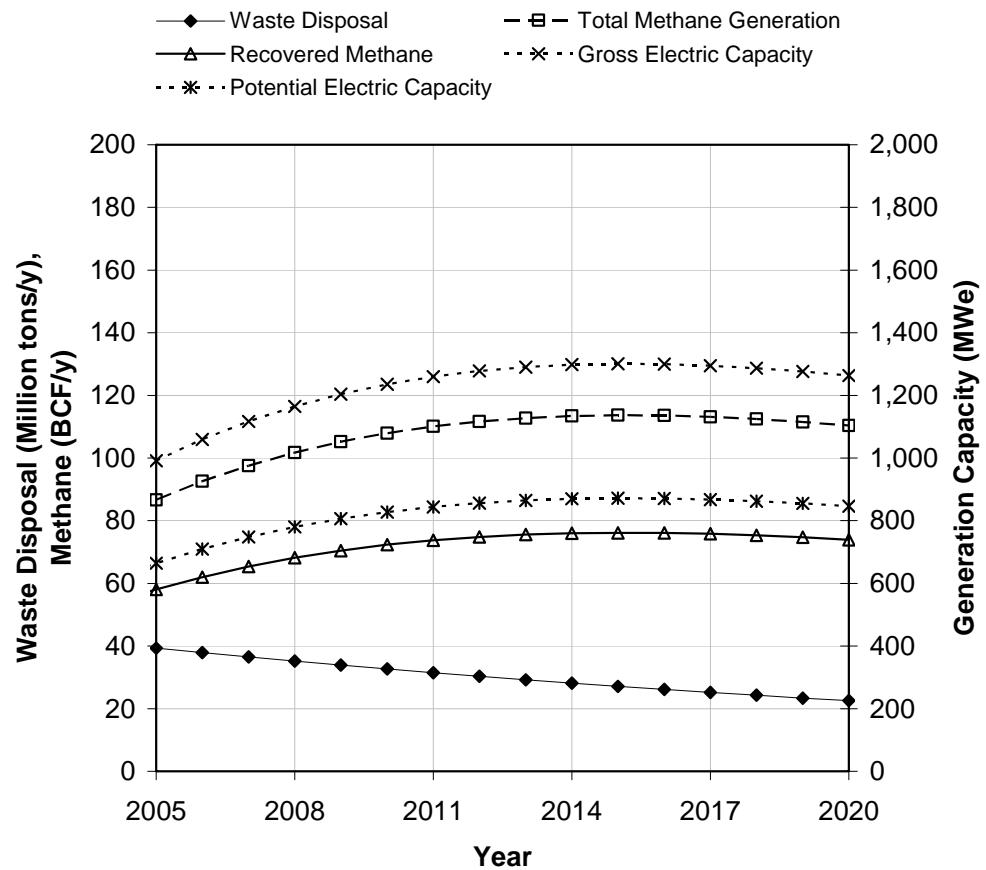
**Figure 12: Methane and Power Generation Rates for Conventional Landfilling, Total Waste Disposal Constant Beyond 2002.**



**Figure 13: Methane and Power Generation Rates for Conventional Landfilling, 5% per Year Decline in Per-Capita Waste Disposal Rate after 2005**



**Figure 14: Methane and Power Generation Rates for Bioreactor Landfills, 5% per Year Decline in Per-Capita Waste Disposal Rate after 2005**



### **3.5 Existing Generation Capacity**

Current sources of electricity generation from biomass in California include

- direct combustion of agricultural and food processing residues, mill residues, forest slash and thinnings, and municipal solid wastes in steam Rankine cycle power plants
- landfill gas to energy systems employing boilers, reciprocating engines, and gas turbines
- anaerobic digestion of animal manures with biogas utilization in reciprocating engines
- sewage digester gas fueled reciprocating engines

Existing generating capacities by type and location are listed in Table 100 and shown in Figure 15. The capacities shown are net capacities exclusive of plant parasitic loads, consistent with the efficiency assumptions used in the gross and technical generation estimates above. Also listed are known planned landfill gas to energy and animal manure digestion facilities.

Thirty biomass (non-MSW) direct combustion power plants are currently operating for a total of 569 MWe. Partitioning of fuel use by type in direct combustion biomass facilities was estimated from the 2002 resource inventory of Morris<sup>23</sup> (Table 101). The total capacity for these facilities is attributed to biomass although all are allowed to fire up to 25% natural gas and some of the energy generated is therefore associated with non-biomass fuel use. Three MSW mass-burn facilities are also operating for a combined 63 MWe of power, of which 70% or 42 MWe can be considered to come from the biomass energy fraction of MSW (Table 52).

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<sup>23</sup> Morris, G. 2002. Biomass energy production in California 2002: update of the California database. NREL/SR-510-33111, National Renewable Energy Laboratory, Golden, CO.

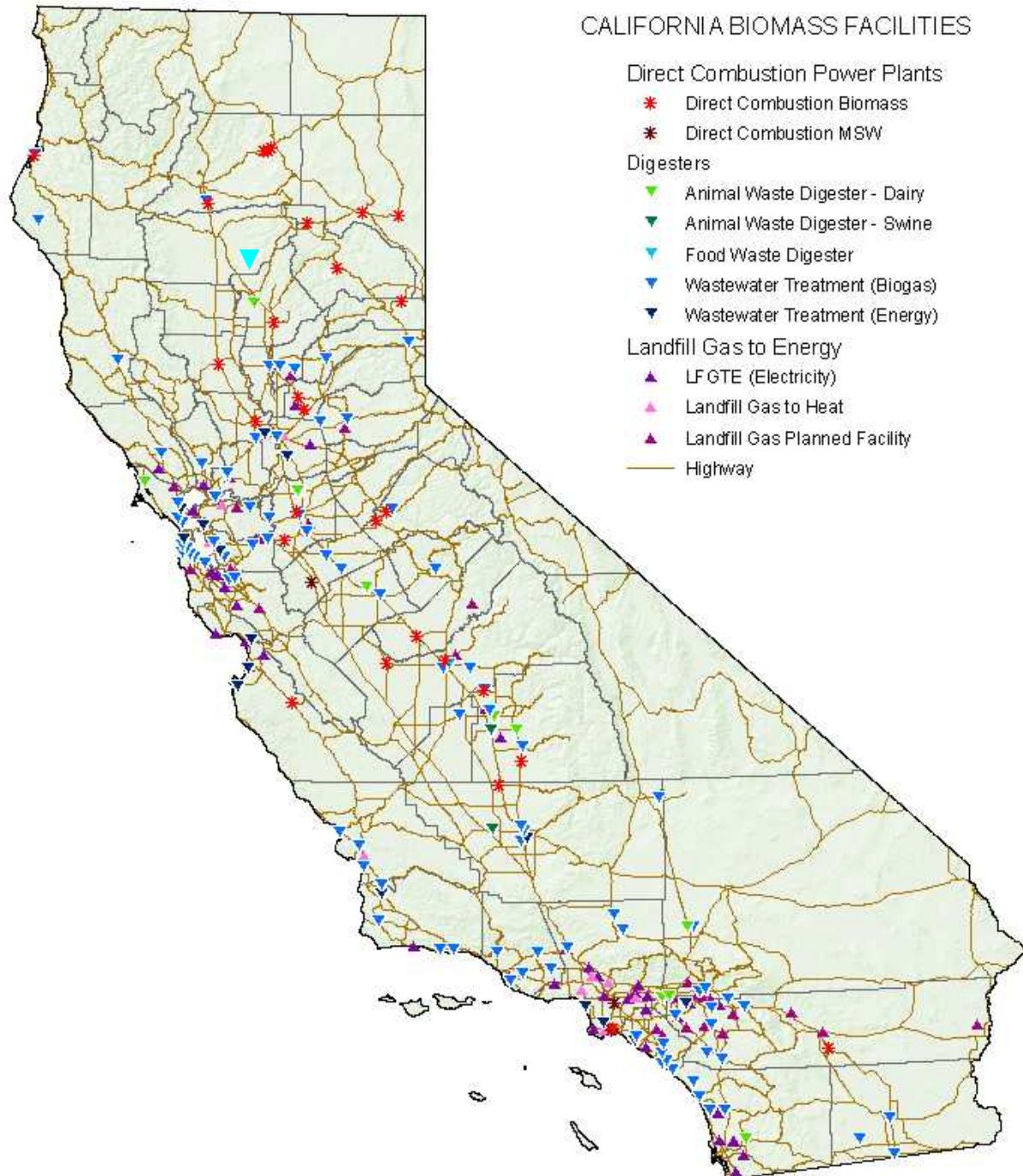
**Table 100: Existing and Planned Biomass Generation Capacity (MWe) in California, 2005.**

County	Biomass Combustion*	MSW (Biomass fraction) Combustion	WWTP (Existing)	LFGTE (Existing)	LFGTE (Planned)	Animal Manure (Existing)	Animal Manure (Planned)	Total	Total Thermal Conversion	Total Biochemical Conversion
Alameda			4.6	8.6	4.5			17.7		17.7
Alpine										
Amador										
Butte	18					0.04		18.0	18	0.0
Calaveras										
Colusa	25			6.8				25.0	25	
Contra Costa								6.8		6.8
Del Norte										
El Dorado					1.3			1.3		1.3
Fresno	50							50.0	50	
Glenn										
Humboldt	37							37.0	37	
Imperial										
Inyo										
Kern	50		0.4				1	51.4	50	1.4
Kings						0.15	0.2			0.2
Lake										
Lassen	49							49.0	49	
Los Angeles		27	36	128				190.7	27	164.0
Madera	25				0.6			25.6	25	0.6
Marin			0.3		4	0.075		4.4		4.4
Mariposa										
Mendocino										
Merced						0.3		0.3		0.3
Modoc										
Mono										
Monterey			1	4.2				5.2		5.2
Napa				1.7				1.7		1.7
Nevada										
Orange		6.98		34				41.0		41.0
Placer	28			1.2				29.2	28	1.2
Plumas	32							32.0	32	
Riverside	47		3.3	1.8	3			55.1	47	8.1
Sacramento			2.83	9	2			13.8		13.8
San Benito										
San Bernardino			4	6		1.16	0.1	11.3		11.3
San Diego				21		0.13		21.1		21.1
San Francisco			1					1.0		1.0
San Joaquin	18.5			0.8		0.16		19.5	19	1.0
San Luis Obispo							0.03	0.0		0.0
San Mateo				2	6			8.0		8.0
Santa Barbara			2.4	3				5.4		5.4
Santa Clara				12.7	1.28			14.0		14.0
Santa Cruz			0.6	3.9				4.5		4.5
Shasta	106							106.0	106	
Sierra	10							10.0	10	
Siskiyou										
Solano				1				1.0		1.0
Sonoma			2	6.4				8.4		8.4
Stanislaus		15						15.0	15	
Sutter				0.3				0.3		0.3
Tehama										
Trinity										
Tulare	21			2.8		0.8		24.6	21	3.6
Tuolumne	27							27.0	27	
Ventura				8.6				8.6		8.6
Yolo	25		0.075	2				27.1	25	2.1
Yuba										
<b>STATE</b>	<b>569</b>	<b>42</b>	<b>66</b>	<b>266</b>	<b>23</b>	<b>2.8</b>	<b>1.1</b>	<b>968</b>	<b>610</b>	<b>358</b>

**Table 101: Fuel Distribution by Category for Existing Biomass Direct Combustion Thermal Power Stations**

	Fraction	Allocated Mwe
Urban Wood	0.31	176
Forest	0.46	262
Agricultural	0.16	91
Food Processing	0.07	40
Total	1.00	569

**Figure 15: Biomass Facilities in California**



## **CHAPTER 4:** **Resource Summary and Statewide Net Generation Potentials**

Within the resource categories considered here, total biomass currently amounts to 83 million bone dry tons (BDT) per year (Table 102). Increasing population will result in increasing waste biomass unless the state moves to reduce consumption. Similarly, increases in animal populations will result in increasing manure production. By 2020 the gross resource from conventional agriculture, forestry, municipal waste and 5 million BDT/y of dedicated biomass crops may be of the order of 98 million BDT/y.

Roughly a third of the current biomass resource is considered to be technically available for conversion or other uses. The other two-thirds are in sensitive habitat areas, on steep slopes not suitable for harvesting, needed to maintain soil tilth and fertility, or unrecoverable by harvesting equipment. On a technical level alone the current resource of 32 million BDT/y coupled with landfill gas generation from waste already in place might contribute more than 3,800 MWe and 29 TWh of electricity (Tables 103, 104). By 2020, the generation potential might approach 6,800 MWe and 51 TWh, contributing as much as 8.7% of the state's capacity and 13.9% of electrical energy. The infrastructure development to handle the resource will likely open up many additional markets for biomass, but the potential for future power generation remains substantially greater than current generation.

The available resource is roughly equally divided among the primary contributing sectors of agriculture, forestry, and municipal wastes (Table 102). Not included in the annually available resource quantities shown in the table are landfill gas and sewage digester gas. The former is currently an important resource coming from waste already in place. The resource potential in sewage digester gas is now about 16% that of landfill gas.

Biomass now supplies fuel for 968 MWe of electric power generating capacity in California. Of this, 610 MWe is produced at present through combustion based thermal conversion processes, and 358 MWe through biological conversion in solid waste landfills and digesters handling waste water sludges and animal manures. Beyond this there is fuel capacity for an additional 2,800 MWe or more from the current resource, with 2,550 MWe from thermal systems and more than 250 through bioconversion. The partitioning between thermal and biological conversion technologies is speculative and both may see more or less capacity development.

**Table 102: Gross and Technical Biomass Resources (million BDT/yr) in California, 2007 – 2020**

Year	Gross				Technical			
	2007	2010	2017	2020	2007	2010	2017	2020
<b>Total Biomass</b>	<b>83.0</b>	<b>88.7</b>	<b>95.4</b>	<b>98.1</b>	<b>32.6</b>	<b>35.7</b>	<b>39.6</b>	<b>40.4</b>
Total Excluding Dedicated Crops	83.0	86.4	90.4	93.1	32.6	33.7	35.1	35.9
Total Thermal Conversion	66.0	70.5	75.6	77.2	26.0	29.1	32.3	32.7
Total Biological Conversion	16.7	18.2	19.8	21.0	6.1	6.7	7.3	7.7
<b>Total Municipal</b>	<b>35.6</b>	<b>37.8</b>	<b>40.0</b>	<b>41.6</b>	<b>9.6</b>	<b>10.3</b>	<b>10.9</b>	<b>11.3</b>
Biosolids landfilled	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
Biosolids diverted	0.7	0.7	0.8	0.8	0.6	0.6	0.6	0.7
Total MSW biomass landfilled	18.3	19.4	20.5	21.3	9.1	9.7	10.3	10.7
Total MSW biomass diverted	16.6	17.7	18.7	19.4	0.0	0.0	0.0	0.0
<b>Total Agriculture</b>	<b>20.6</b>	<b>21.9</b>	<b>23.6</b>	<b>24.8</b>	<b>8.6</b>	<b>9.1</b>	<b>9.9</b>	<b>10.3</b>
Total Animal manure	10.2	11.3	12.5	13.4	3.5	3.9	4.3	4.6
Total Cattle manure	8.4	9.4	10.5	11.2	3.1	3.5	3.9	4.1
Total Dairy cow manure	3.9	4.4	5.0	5.3	2.0	2.2	2.5	2.7
Total Orchard and vine	2.5	2.6	3.0	3.1	1.7	1.8	2.1	2.2
Total Field and seed	4.8	4.7	4.7	4.7	2.1	2.0	2.0	2.0
Total Vegetable	1.7	1.7	1.8	1.8	0.1	0.1	0.1	0.2
Total Food processing	1.5	1.5	1.6	1.7	1.2	1.2	1.3	1.4
<b>Total Forestry</b>	<b>26.8</b>	<b>26.8</b>	<b>26.8</b>	<b>26.8</b>	<b>14.3</b>	<b>14.3</b>	<b>14.3</b>	<b>14.3</b>
Total Dedicated crop	0	2.3	5.0	5.0	0.0	2.0	4.5	4.5
Landfill gas	-	-	-	-	-	-	-	-
Waste water treatment	-	-	-	-	-	-	-	-

**Table 103: Gross and Technical Power Generation Potential from Biomass (MWe) in California, 2007 – 2020**

Year	Gross				Technical			
	2007	2010	2017	2020	2007	2010	2017	2020
<b>Total Biomass</b>	<b>9,480</b>	<b>12,330</b>	<b>15,600</b>	<b>15,900</b>	<b>3,820</b>	<b>5,410</b>	<b>6,700</b>	<b>6,800</b>
Total Excluding Dedicated Crops	9,480	11,966	14,636	14,936	3,820	5,082	5,832	5,932
Total Thermal Conversion	8,162	10,876	13,997	14,275	3,335	4,876	6,112	6,183
Total Biological Conversion	1,311	1,449	1,579	1,667	490	538	587	620
<b>Total Municipal</b>	<b>3,940</b>	<b>5,140</b>	<b>6,450</b>	<b>6,700</b>	<b>1,030</b>	<b>1,320</b>	<b>1,630</b>	<b>1,690</b>
Biosolids landfilled	13	17	21	21	-	-	-	-
Biosolids diverted	73	97	123	128	58	78	99	102
Total MSW biomass landfilled	1,939	2,478	3,061	3,179	969	1,239	1,531	1,590
Total MSW biomass diverted	1,930	2,567	3,264	3,389	-	-	-	-
<b>Total Agriculture</b>	<b>1,960</b>	<b>2,350</b>	<b>2,800</b>	<b>2,920</b>	<b>890</b>	<b>1,390</b>	<b>1,340</b>	<b>1,380</b>
Total Animal manure	766	855	948	1,011	270	303	337	361
Total Cattle manure	618	693	773	827	227	256	286	306
Total Dairy cow manure	292	329	369	396	146	164	184	198
Total Orchard and vine	330	434	589	623	231	599	413	436
Total Field and seed	556	686	817	822	239	296	354	340
Total Vegetable	133	153	162	169	11	12	13	14
Total Food processing	175	221	282	291	140	177	226	233
<b>Total Forestry</b>	<b>3,580</b>	<b>4,470</b>	<b>5,360</b>	<b>5,360</b>	<b>1,910</b>	<b>2,380</b>	<b>2,860</b>	<b>2,860</b>
Total Dedicated crop	0	364	964	964	-	328	868	868
Landfill gas	694	694	694	694	500	587	710	
Waste water treatment	116	124	135	138	78	83	90	93

**Table 104: Gross and Technical Energy Generation Potential from Biomass (GWH/yr) in California, 2007-2020**

Year	Gross				Technical			
	2007	2010	2017	2020	2007	2010	2017	2020
<b>Total Biomass</b>	<b>70,500</b>	<b>91,800</b>	<b>116,000</b>	<b>119,000</b>	<b>28,500</b>	<b>40,400</b>	<b>49,900</b>	<b>50,700</b>
Total Excluding Dedicated Crops	70,500	89,090	108,820	111,820	28,500	37,960	43,440	44,240
Total Thermal Conversion	60,775	83,705	111,398	113,500	24,834	38,800	51,975	52,502
Total Biological Conversion	9,765	10,789	11,759	12,413	3,646	4,008	4,372	4,619
<b>Total Municipal</b>	<b>29,300</b>	<b>38,300</b>	<b>48,000</b>	<b>49,900</b>	<b>7,700</b>	<b>9,800</b>	<b>12,100</b>	<b>12,600</b>
Biosolids landfilled	96	124	155	159	-	-	-	-
Biosolids diverted	541	722	917	952	433	577	734	762
Total MSW biomass landfilled	14,400	18,500	22,800	23,700	7,218	9,226	11,398	11,836
Total MSW biomass diverted	14,340	19,110	24,300	25,200	-	-	-	-
<b>Total Agriculture</b>	<b>14,600</b>	<b>17,500</b>	<b>20,900</b>	<b>21,700</b>	<b>6,600</b>	<b>10,400</b>	<b>10,000</b>	<b>10,300</b>
Total Animal manure	5,700	6,360	7,100	7,530	2,010	2,300	2,510	2,700
Total Cattle manure	4,610	5,163	5,758	6,161	1,690	1,905	2,126	2,278
Total Dairy cow manure	2,171	2,448	2,747	2,948	1,086	1,225	1,373	1,474
Total Orchard and vine	2,500	3,230	4,390	4,640	1,720	4,500	3,070	3,250
Total Field and seed	4,100	5,110	6,090	6,120	1,780	2,200	2,640	2,530
Total Vegetable	990	1,140	1,210	1,250	80	90	97	102
Total Food processing	1,300	1,650	2,100	2,170	1,040	1,320	1,680	1,740
<b>Total Forestry</b>	<b>26,600</b>	<b>33,300</b>	<b>39,900</b>	<b>39,900</b>	<b>14,200</b>	<b>17,700</b>	<b>21,300</b>	<b>21,300</b>
Total Dedicated crop	-	2,710	7,180	7,180	-	2,440	6,460	6,460
Landfill gas	5,171	5,171	5,171	5,171	3,724	4,374	4,912	5,171
Waste water treatment	863	924	1,004	1,027	578	619	673	688

## **CHAPTER 5: Conclusions**

Biomass resources from agriculture, forestry, and municipal wastes currently totals about 83 million dry tons per year. Of this, 32 million tons are estimated to be available on a technically sustainable basis. The economically available resource has not yet been fully quantified.

The gross annual biomass resource is projected to increase by more than 10 million tons by 2020 without dedicated biomass crop additions, and to possibly 15 million tons per year with them. The net biomass increment as dedicated crops are added may be reduced if crop shifting within agriculture occurs due to land and water limitations or for other reasons.

The gross power generating potential from all biomass sources is about 9,500 MWe currently, increasing to nearly 16,000 MWe by 2020 given resource growth and conversion efficiency improvements. Utilization at these levels is not likely to prove economical or technically sustainable. The technical generation potential is currently estimated at 3,820 MWe and could increase to 6,800 MWe by 2020 with continued resource growth and efficiency improvements.

Biomass fueled conversion systems in California currently contribute 968 MWe of capacity, about 1.5% of total capacity available to the state. The high capacity factor of biomass facilities leads to an energy contribution of 2.4% that is greater than the capacity fraction. The technical potentials for power and energy are now 6 and 9.7% of state totals, and could increase to 8.7 and 13.9% by 2020 even with a growing state demand. The net incremental technical generation potential is over 2,800 MWe at present, and could exceed 6,000 MWe by 2020. Landfill gas will remain a significant resource through 2020 due to the large amount of waste in place even if radical reductions in future waste disposal occur.

Through 2020 the largest resources for development will be municipal solid waste, in-forest biomass, animal manures, landfill gas, orchard and vineyard residues, and field crop residues. A number of these have distinct properties that will need to be addressed through substantial research and development efforts to identify suitable conversion technologies and handling practices. Appropriate policies, incentives, and economic mechanisms to further develop these resources will also need to be identified, and more detailed technical and economic investigations will be needed, both at the state and local levels.